



Part 2

THE

ENTOMOLOGIST'S

MONTHLY MAGAZINE:

CONDUCTED BY

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SECOND SERIES VOL. XIV.

[VOL. XXXIX.]

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"It is little short of impossible to account for our callous disregard of the wondrous beauty of the multitudinous objects displayed in Nature's realm, our willingness to remain ignorant of the mysterious changes which are ever happening before our eyes."—*Prof. H. E. Armstrong* (on Education).

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Insects

THE

# ENTOMOLOGIST'S MONTHLY MAGAZINE:

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SECOND SERIES — VOL. XIV.

[VOLUME XXXIX.]

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*NEPHOPTERYX SIMILELLA*, ZINCK., A NEW BRITISH PHYCID.

BY C. G. BARRETT, F.E.S.

In May last our old friend and colleague, Dr. Knaggs, sent up for examination a specimen, mutilated yet unmistakeable, of *Nephoptyx similella*, Zinck. It had been captured among oak in the New Forest, in the latter part of June, 1901, by Mr. Bernard Piffard. In the past summer Mr. Piffard endeavoured to confirm the existence of the species in the New Forest, and informs me that he saw a specimen, but failed to secure it.

Now, however, Mr. C. W. Dale has forwarded an individual taken in the same locality by Mr. C. Gulliver, and the species appears certainly to have become domiciled here.

It is of about the size of *N. genistella*, but utterly different in appearance; its general colour slate-black and very shining; before the middle of the fore-wings is a yellow-white, transverse, straight stripe, broadest on the dorsal margin, but hardly reaching the costa; the only other perceptible marking is a faint, waved and rippled, whitish "second line;" hind-wings glistening smoky-grey. Food, oak.

In Staudinger's Catalog (1871) this species was recorded only from Germany and Livonia; in that published last year it is said also to be found in France, Holland, Austria-Hungary, and Central Italy; there is, therefore, good reason to believe that it is now a migrating and extending species, and that it has but recently reached our shores.

Tremont, Peckham Rye, S.E. :

December 5th, 1902.

# FURTHER NOTES ON THE *TORTRICIDÆ* AND *TINEINÆ* OF DUMBARTONSHIRE.

BY J. R. MALLOCH.

Since the publication of my list of the *Tortricidæ* and *Tineina* of Bonhill (Ent. Mo. Mag., 1901) I have added some few species to it, and also to the list of the *Micro-Lepidoptera* published in the Brit. Association Hand-Book to the Natural History of the West of Scotland, 1901. So far the *Nepticulæ* have been much neglected, and I know that there are many species of this genus that could be easily found were one to devote the time necessary to rear them. I have given some of my time to the rearing of *Lithocolletes*, and with fair success, and although I can already lay claim to a score of them I think there are some species still awaiting discovery here. The *Gelechiidæ* are still poorly represented, but they are slowly increasing in number. The *Coleophoridæ* are so difficult to name without reliable facts regarding their life history, that they are practically at a standstill. However, taking everything into consideration, fairly good progress may be recorded. In the following list those marked with an asterisk (\*) are new to my district list, and those marked (†) are not included in the "Natural History of the West of Scotland," above mentioned. One or two I have failed to find recorded from Scotland.

## TORTRICIDÆ.

*Amphysa Gerningana*, Seh., not a very common species, found on the moors in the same parts as the following, but in August.—*Walkerana*, Curt., very common on the moors at the end of April and beginning of May, the females are scarce.

*Peronea mixtana*, Hb., this species is very common, and occurs till well on in May; the method I adopt to obtain good specimens is to turn up the heath where it is to be found in isolated patches, somewhat raised and having a dry bottom; by searching closely underneath, on even a cold day in winter, the moths are not difficult to obtain. The females are less numerous than the males early in the year, but by the end of April good specimens of the former are easily obtained, while the males are not worth taking. Do some of the females winter as pupæ?

*Mixodia palustrana*, Zett., does not occur very commonly, but if carefully looked for in pine woods on the hills is almost certain to turn up.—*Bouchardana*, Dbl., *rubiginosa*, H.-S., fairly common among pines in July; care should be taken not to pass this species as *trimaculana*, as they resemble each other closely in some varieties of the latter.

*Capua favillaceana*, Hb., occurred in fair numbers in Croftthugen last year, but most of the specimens were worn.

*Grapholitha nisella*, Clerck, I bred a great number of this species from catkins obtained at the end of May from two sallows in Murroch Glen.

*Pædisca ophthalmicana*, Hb., I bred a series of this from rolled leaves of aspen.

*Ephippiphora trigeminana*, St., this species is always scarce, and is not easily separated from *Brunnichiana*; in fact, I have seen it very frequently mixed, or specimens of the latter standing as the former, in collections.

*Coccyx argyran*, Hb., I have taken newly emerged specimens of this from trunks of apple trees in the orchard at Strathleven; the empty pupa cases were numerous, projecting from chinks in the bark.—*vacciniana*, Zett., I obtained a splendid series of this at rest about eight o'clock in the evening in June, on the leaves of the food plant; sometimes the specimens were paired.

*Retinia posticana*, Zett., *turionana*, var.?, this species is most readily obtained in the larva state (in April); the presence of the larva is detected by the sap exuding from the punctured twigs forming little balls of white resin near the tips of the pine branches; the twigs should be cut off about six inches from the tip, and little care is required to produce the imago; the larva pupates in the bud; very often in the central one, thus causing the further growth to branch off at an angle, and sometimes two small branches to result.

\*†*Stigmonota internana*, Gn., occurred this year on the bank of Murroch Glen, on broom.

*Tortricodes hyemana*, Hb., very common in Murroch Glen, in March, on oak.

#### TINEINA.

*Tinea imella*, Hb., very common at Dillichip; I took about 100 in a week between seven and nine, in the evenings in June; I have netted as many as eight specimens with one sweep of the net through the grass in one special spot, and in other parts quite near the species does not seem to occur.

\**Depressaria conterminella*, Zett., I bred a specimen of this from the willow catkins which produced *G. nisella*.—\**angelicella*, Hb., a few bred from *Angelica*.—\**pulcherrimella*, Stt., this species was abundant, but in poor condition, at rest on elm and oak trunks, in a field on Strathleven policies, in August.

*Gelechia diffinis*, Hw., I bred a single specimen of this, but from what I cannot remember, as it was unconsciously introduced to my breeding cases.—*intaminatella*, Stt., not uncommon in Murroch Glen.—\*†*artemisiella*, Tr., scarce, Levenside Moor.—\*†*senectella*, one specimen at Dillichip.—\*†*desertella*, not common, Dillichip.—\*†*tebrosella*, Murroch Glen.—\*†*anthyllidella*, Murroch Glen, I can find no Scotch record of this species.

\*†*Pancalia Lewenhoeckella*, var. *Latreillella*, occurs on the side of Murroch Glen in fair numbers, both sexes, but males scarce; (limestone formation).

\*†*Ornix guttea*, this species occurred in the orchard at Strathleven; the larvæ were very numerous in September on the apple leaves; this species does not seem to have been recorded from Scotland before, though how it has not been previously I cannot say, it ought to occur commonly.

*Chauliodes charophyllellus*, Gz., this species is abundant on the under-sides of leaves of *Heracleum* in the larva state; I have taken twenty specimens from one leaf; scarcely ever seen as the imago, in fact I have only taken two on the wing in ten years.



\*†*Elachista Gleichenella*, F., one specimen on the wing in Murroch Glen.—*kilmunella*, Stt., very common in July on the moors among rank grass in low lying portions; on dull days dozens may sometimes be seen in small isolated patches of grass flying from blade to blade with a peculiar fluttering flight. I examined some of those groups, but failed to detect any "virgin female" as the attraction, but of course such may have existed, although I could not find it.—*eleochariella*, Stt., this species occurred along with the foregoing in fair numbers; I took one or two specimens that do not agree very well with this, nor with *rhynchospora*, and which Mr. Barrett would not trust himself to name from the only good specimens I have.

\*†*Lithocolletis salicicolella*, Sirc., in rearing *Spinolella* from sawfly leaves I obtained also a few specimens of this last year.—*sorbi*, Fr., in my old list, previously mentioned, I wrote that there was I thought another species of this group occurring on *Pyrus malus*; since then I have had bred specimens returned by Mr. Bankes as this species, although the plant is not recorded for it in this country.—

\*†*Dunningiella*, Stt., Croftthugen.

\*†*Cemiostoma scitella*, Zett., Strathleven orchard, on apple.

*Opostega crepusculella*, Zett., not uncommon in Strathleven orchard.

\*†*Bucculatrix ulmella*, Zett., Croftthugen, Bonhill, on oak.

\*†*Nepticula turicella*, H.-S., = *tityrella*, St., Croftthugen, Bonhill.—\*†*ignobilis*, Stt., Croftthugen.—\*†*betulicola*, Stt., Croftthugen.

17, Dillichip Terrace, Bonhill,

Dumbartonshire:

November, 1902.

#### HISTORICAL NOTES ON *LYCÆNA ARION* IN BRITAIN.

BY C. W. DALE, F.E.S.

This species still frequents the flower-clad slopes of the coasts of Devonshire and Cornwall, and the rough hill sides to be found in Gloucestershire, among the Cotswold Hills. See Ent. Mo. Mag., vols. xxi, xxxii and xxxviii; Entomologist, vol. xxv. It formerly also frequented the following counties:—

NORTHAMPTONSHIRE—The Rev. W. Bree writes in the Zoologist, vol. x, p. 3350: "The great prize of all the butterflies of our neighbourhood I hold to be *arion*. It is confined entirely to Barnwell Wold, with the exception of a single specimen, which I once met with in a rough field near Polebrook." It was first taken by a son of Mr. Bree's, on July 14th, 1837. Many entomologists visited Barnwell Wold in search of it, and Mr. Wolley is reported as having taken fifty or sixty specimens in a few days. In 1860 Mr. Coleman writes: "It is less abundant there than formerly, from the repeated attacks of collectors, who catch all they can find;" and Mr. Goss informs us in the Ent. Mo. Mag., vol. xxi, p. 107, that it was certainly extinct in Barnwell Wold when he was there in 1865, and that he was informed that it had been rarely, if ever, seen there since the wet summer of 1860. One specimen was taken at Wigsthorpe by Mr. Henry Doubleday between June 3rd and 28th, 1841 (Entomologist, vol. i, p. 156).



BEDFORDSHIRE.—Taken by the Rev. Dr. Abbott in the Mouse's Pasture, near Bedford, in 1798, and by J. C. Dale in 1819.

HUNTINGDONSHIRE.—One taken in Monk's Wood by J. C. Dale, July 3rd, 1833.

CAMBRIDGESHIRE.—Chatteris, Stainton (Ent. Trans., 1858—1861, p. 234).

RUTLANDSHIRE.—Rington, same reference as above.

BUCKINGHAMSHIRE.—Cliefden, Lewin, 1795.

KENT.—“Has been taken on the Dover Cliffs,” Lewin, 1795. “It has been caught near the signal house on the cliffs at Dover, and several were taken the past season in the vicinity of Deal” (Stephens' Illustrations, 1828).

HAMPSHIRE.—Taken on the hills near Winchester by Mr. Griesbach, when a boy at school there; some of the specimens were in Mr. Curtis' collection.

WILTSHIRE.—Marlborough Downs, Lewin, 1795; Savernake Forest, T. A. Preston (Newman's Butterflies, 1871).

DORSETSHIRE.—Charmouth, one specimen, Beverley Morris (F. O. Morris British Butterflies, 1853).

SOMERSETSHIRE.—Hills near Bath, Lewin, 1795. “In plenty on the hills near Langport, by Messrs. J. C. Dale, Quekett, and Paul, in 1833, 1834, 1835, and 1836. I took about forty specimens on June 15th, 1833, in a situation abounding with long grass and brambles, at Langport; and on the same day in 1834 I took about twenty, and Mr. Dale ten,” John Quekett (Newman's Butterflies).

HEREFORDSHIRE.—“Taken near the aqueduct, Hereford, but rare,” F. E. Harman (Newman's Butterflies, 1871).

Glanvilles Wootton, Dorset :  
1902.

AN ALPINE FORM (*HOLOTOXA*, MEYR.) OF *CHOREUTIS*  
*MYLLERANA*, FABR.

BY E. MEYRICK, B.A., F.Z.S.

I took a fresh ♀ of this insect in the middle of August near the Karer-Sec, S. Tyrol, at about 7,500 feet; it differs in some particulars from every specimen I have seen, and probably represents a peculiar local form. The differences are as follows: abdomen more irregularly mixed with whitish; fore-wings with dorsal half of median area much more densely irrorated with whitish, upper of the two white discal dots obsolete, silvery markings united to form an entire curved line from beyond middle of costa to tornus, white costal spot beyond this considerably enlarged; under-surface of hind-wings with disc irregularly mixed with white, with an entire curved postmedian white transverse line. In normal specimens the silvery line mentioned in the fore-wings is always interrupted in disc, and the under-surface of hind-wings has only two white discal dots, whilst its

postmedian line is broadly interrupted beneath costa. I think these differences are sufficiently marked to deserve a name, and suggest *MOLOTOXA*. The locality was a steep grassy slope at the foot of dolomite rocks; I noted all the flowers I saw during my tour, and observed no *Scutellaria* there or elsewhere; I doubt whether it occurs so high up.

Elmswood, Marlborough:

November 30th, 1902.

NOTE ON *HYPOCHALCIA GHILIANII*, STAUD., AND ITS SYNONYMY.

BY E. MEYRICK, B.A., F.Z.S.

Early in August last I was fortunate in taking a fresh specimen of this species (which appears to be very scarce in collections) in a meadow at an elevation of 5,000 feet near Gossensass, on the south side of the Brenner Pass, Tyrol. I take the opportunity to point out that in my judgment, *lignella*, Hein., is referable to this species (the description of *Ghilianii*, Staud., was not published until later), and not to *griseoæneella*, Rag., to which it is referred by Ragonot and Staudinger on the assumption that it is identical with *lignella* of Eversmann and Herrich-Schäffer, which is, I think, really the same as *griseoæneella*. The name *lignella*, Hb., is now assigned by Staudinger to *melanella*. The matter is chiefly of interest in regard to geographical range; if I am correct in my opinion, then *Ghilianii* is confined to S.E. Europe, whilst *griseoæneella* is Asiatic.

Elmswood, Marlborough:

November 28th, 1902.

*ODYNERUS (HOPLOPUS) SIMILLIMUS*, MOR., A WASP NEW TO THE BRITISH LIST.

BY EDWARD SAUNDERS, F.R.S.

This most interesting addition to our British fauna has been discovered by Mr. W. H. Harwood in the neighbourhood of Colechester; he took a single ♂ last year, and his son has this year taken a few of both sexes, on flowers, near a ditch, on the marshes. It was originally described by Morawitz, Hor. Soc. Ent. Ross., iv, p. 138 (1866) from Russia, without any exact locality, but in Vol. xxix (1895) of the same journal he quotes as localities for it, Charkov, Kasan, Sarepta, Orenburg, Irkutsk. Saussure's description of his *albopictus* also agrees closely with our insect, but he does not mention the tubercles on the metapleuræ, and his locality (l'île de Rhodes) is so far south

that it seems more probable our species is that described by Morawitz—possibly, however, *simillimus* and *albopictus* may eventually prove to be synonymous.

The new species belongs to the "*Hoplopus*" section of the genus, and in general appearance closely resembles *melanocephalus*, Gmel., but the coxal spines of the intermediate pair of legs and the simple femora at once distinguish its ♂, and the yellow line on the post-scutellum and the tubercles on the metapleuræ serve to distinguish the ♀.

Structurally it is allied by the ♂ characters to *reniformis*, Gmel., but the genal spine at the base of the mandibles is black, and not yellow, as in *reniformis*, the coxal spines of the intermediate legs are finer and shorter, pale, with their widened bases black, whereas in *reniformis* the whole spine is yellow anteriorly; besides these characters, the pale, almost white markings, the narrow abdominal bands and the tubercles of the metapleuræ will distinguish it at once. Long. 11. mm. This species may possibly have been mixed in collections, especially the ♀, with either *melanocephalus* or *levipes*, but as mentioned above, the form of the metathorax, and the pale line on the postscutellum will at once establish its identity. I am much indebted to Mr. Harwood for kindly presenting me with the ♂ and ♀ from which I have drawn up the above remarks.

St. Ann's, Woking :

December 1st, 1902.

AN ANNOTATED LIST OF *ODONATA* COLLECTED IN WEST  
CENTRAL SPAIN, BY DR. T. A. CHAPMAN AND MR. G. C. CHAMPION  
IN JUNE AND JULY, 1902.

BY ROBERT McLACHLAN, F.R.S., &c.

In this Magazine for July, 1902 (Ent. Mo. Mag., 2nd series, xiii, pp. 148—150), I gave an enumeration of the species of *Odonata* taken by Messrs. Chapman and Champion in July and August, 1901, in a district of Central Spain of which the town of Cuenca and the Sierra de Albarracin may be cited as representative localities. In 1902 they explored a district much further to the west, which may be briefly indicated almost in Dr. Chapman's own words, as follows:—  
"Arrived at Bejar about 100 miles west of Madrid, in the extreme south-eastern corner of the Province of Leon, and close to Estremadura, on June 26th. Bejar is close under the Sierra de Bejar (8000 ft.), a small hill-mass lying between the Sierras de Gredos and

de Gata, isolated from either, but nearer the former than the latter. The town lies at about 3000 ft. elevation. We went several times to the top of the Sierra, and worked in other directions. On July 17th we proceeded to Piedrahita de Avila in Castile, over 30 miles east of Bejar, lying under a low (5500 ft.) sub-ridge of the Sierra de Gredos, and with a wide plain on the other side. Hence an excursion was made to El Barco, a little town on the upper waters of the river Tormes. On the 23rd Avila was reached."

I find 24 species in the collection, or nearly the same number as from the Cuenca district; but on comparing the two Lists it will be seen that there is a not inconsiderable amount of specific discrepancy in the materials. And as to racial forms this more westerly district may perhaps be regarded as less meridional, but the difference is very slight indeed.

#### LIBELLULINÆ.

*PLATETRUM DEPRESSUM*, L. Bejar and Avila, 3 ♂, two of them immature, which seems to me as late for so far south. The specimens are somewhat small.

*LIBELLULA QUADRIMACULATA*, L. Piedrahita (3), El Barco (1). These examples have very small nodal spots, and scarcely a trace of yellow on the wings. Not indicated as Spanish in Ed. Pictet's "Synopsis" (1865), but since recorded from several localities by Navás.

*SYMPETRUM FLAVEOLUM*, L., var. *LUTEOLUM*, Selys. Avila and Piedrahita, common.

*SYMPETRUM MERIDIONALE*, Selys. Bejar. Mostly infested with the red *Acari*, as is usual.

*SYMPETRUM STRIOLATUM*, Chp., Bejar.

*SYMPETRUM SANGUINEUM*, Müll. Piedrahita and El Barco.

*ORTHETRUM BRUNNEUM*, Fouse. Bejar and Avila.

*ORTHETRUM CÆRULESCENS*, F. Bejar and El Barco. Quite ordinary.

#### GOMPHINÆ.

*ONYCHOGOMPHUS UNCATUS*, Chp. Bejar.

*ONYCHOGOMPHUS FORCIPATUS*, L. Avila, 1 ♀, practically of the "race méridionale" of De Selys.

*GOMPHUS PULCHELLUS*, Selys. El Barco, 1 ♀.

#### CORDULEGASTRINÆ.

*CORDULEGASTER ANNULATUS*, Latr. Bejar and Piedrahita, of the typical form. The examples from Cuenca and neighbourhood were, on the contrary, strongly of the meridional or "*immaculifrons*" race.

#### ÆSCHNINÆ.

*ÆSCHNA MIXTA*, Latr. Bejar, 1 ♀.

## CALOPTERYGINÆ.

CALOPTERYX SPLENDENS, Harris, var. (or race) *xanthostoma*, Chp. Bejar, Piedrahita, El Barco.

CALOPTERYX VIRGO, L., var. (or race) *meridionalis*, Selys. Bejar.

## AGRIONINÆ.

PLATYCNEMIS ACUTIPENNIS, Selys. Bejar.

ISCHNURA GRAELLISII, Ramb. Bejar and Avila. It is worthy of note that this species (very distinct from *I. elegans*, which it appears to replace in the Iberian peninsula and in North Africa) occurs at San Sebastian in N. W. Spain, close to the French frontier, and also at the not-far-distant St. Jean de Luz, *on French territory*. Dr. Chapman found it in both localities.

PYRRHOSOMA NYMPHULA, Sulz. (*minium*, Harris). Bejar.

PYRRHOSOMA TENELLUM, Villers. El Barco; one of the females pertains to the var. *melanogastrum*, Selys (common in England in the New Forest).

LESTES VIRIDIS, V. d. L. Bejar, 1 ♀.

LESTES DRYAS, Kby. (*nympha*, Selys). Bejar, Piedrahita, El Barco; common.

LESTES VIRENS, Chp. Avila, probably common.

LESTES BARBARA, F. Bejar, Avila; abundant at the latter locality.

SYMPYCNA FUSCA, V. d. L. Spread over the district; very common at Avila. Little known as Spanish until recently.

Lewisham, London:

November 29th, 1902.

# HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH *TENTHREDINIDÆ*, &c. (1).

BY THE REV. F. D. MORICE, M.A., F.E.S.

In the series of papers of which this is the first, I shall not venture to aim at giving a complete synopsis of the British Saw-flies. For that, at present, neither my knowledge nor my "material" is adequate. But I hope that by these notes I shall, at least, be able to give some assistance to collectors in bringing the arrangement and naming of their collections somewhat more "up to date" than is usual at present.

My chief excuse for undertaking this is that I have been for some years in frequent correspondence, and lately have had the pleasure of making personal acquaintance, with the great continental authority on *Tenthredinidæ*, Pastor F. W. Konow, who, by determining for me many specimens British and foreign, by communicating to me others from his own collections, and by answering freely and fully (both *in litteris* and orally) questions I have asked him as to his views published and unpublished on all sorts of points, has removed much



of the difficulty I used to feel when I was trying to arrange my captures of these insects according to the tables of Thomson, André, Cameron, &c. It is now twenty years since the first volume of the latter writer's well-known Monograph appeared, and during the whole of that time, year by year and almost month by month, Herr Konow has been continually publishing fresh works, descriptive, systematic, etc., on various branches of the subject, and has not only thrown much new light on the difficulties of its synonymy, but has greatly altered and (to my thinking at least) improved upon the classifications of the Sub-Order adopted by previous writers.

These important contributions to our knowledge of the present subject have unhappily not as yet been collected into a single volume; they are dispersed through various numbers of foreign scientific periodicals and Transactions of Societies, French, German, Austrian, Russian, &c. But (in many cases by gift from the author) I have gathered a nearly complete collection of them; and they include thorough systematic Revisions of many groups among the Saw-flies, and materials for the revision of others (new characterizations of genera and species, corrections in synonymy, &c.), which will certainly have to be taken into account whenever a new British Monograph or Revision of our List is attempted. But for this I think the time is not yet ripe—there is much work to be done previously, both in the collection of specimens from British localities which have never been properly worked, and in re-examination of existing collections and investigation of ancient records, many of which latter, I am persuaded, will prove to be based on errors. And to correct these errors will be no easy matter, for our old collectors were not always careful to indicate the “provenance” of their specimens, and our English methods of “setting” insects (short pins, extended wings, “carding,” &c.) make it often quite impossible to examine properly the characters which *must* be examined if a specimen is to be determined “for certain.” Now and then an insect may be identified by simple inspection of the dorsal surface, which is all that can be seen in many carded specimens; but this is quite the exception. Sometimes examination of the *claws*, or the *pleuræ*, or the *central* segments of the abdomen, is indispensable, and without it all attempts to name the specimen are mere guess work. Our methods certainly display the wings well, and their venuration, &c., gives many very useful characters; but to rely solely upon this is extremely dangerous, and has been the source of countless difficulties and confusions.

I think it may be well to begin my papers with some definitions of technical terms that will from time to time have to be employed in them.

Taking, then, almost any saw-fly—say, for instance, *Tenthredo mesomela*, L., one of our best known species—and starting with the head as viewed from above, we find just behind the posterior ocelli a quadrangular space bounded laterally by distinct furrows—this is the “Scheitel” of Konow, we may call it the “*vertical area*.” The spaces bordering the compound eyes are the “*orbits*.” The space, in which lie the ocelli, reaching from the vertical area to the insertions of the antennæ is the “*frons*.” Part of this space is surrounded by a system of five furrows, more or less distinct in different genera, producing what is called the “*pentagonal area*”: its apex lies a little below the front ocellus. Then, looking at the insect's face, the prominent “*clypeus*” appears just below the antennæ, and below its somewhat “emarginate” apex is seen the subtriangular “*labrum*.” The space between the eye and the base of the mandible, rather short in the present case, is the “*gena*” = “*Wangenanhang*” of Konow (better seen by looking at the insect sideways).

The back of the head, facing the thorax, is the “*occiput*.” Between the occiput and the compound eyes lie the “*tempora*,” which in this species are “distinctly margined,” *i. e.*, separated from the occiput by an evident raised edge.

(I should perhaps have said before that the term “orbit” is often used rather loosely, chiefly in descriptions of *colour*, to denote any region adjacent to the eyes. Areas called “orbits” in this sense may often be a part of the *genæ* or *tempora*, and in measuring the latter for descriptive purposes one always measures *right up to the eye*, *i. e.*, not merely up to any coloured margin which may happen to surround it).

The details of the thorax, which furnish many very important characters, can hardly be made clear except by diagrams. I give therefore now an outline *camera lucida* sketch of the thorax in *Tenthredo mesomela*, L., viewed from two aspects—(fig. 1) dorsally, *i. e.*, from above, (fig. 2) laterally, *i. e.*, from the side.

FIG. 1.

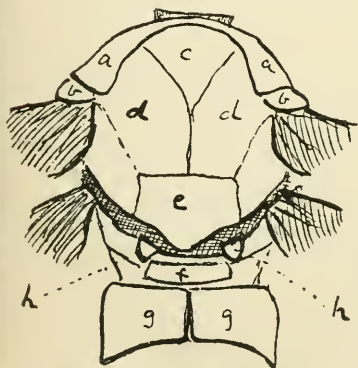


FIG. 2.



## EXPLANATION OF FIGURES 1 AND 2.

<i>a</i> (in both figures)—pronotum.	<i>h h</i> —cenchri (the space between them is the <i>metanotum</i> ).
<i>b b</i> —tegulæ.	<i>k</i> (in fig. 2)—prosternum.
<i>c</i> —middle (or front) lobe of mesonotum.	<i>l</i> —mesosternum.
<i>d d</i> —side lobes of ditto.	<i>m</i> —metasternum.
<i>e</i> —scutellum (or better perhaps <i>scutellum mesothoracis</i> , to distinguish it from <i>f</i> ).	<i>n</i> —mesopleura.
<i>f</i> —postscutellum (better <i>scutellum metathoracis</i> ).	<i>o</i> —metapleura.
<i>g</i> —propodeum or median segment (the central slit in this is what Cameron calls the blotch).	<i>p p p</i> —coxæ.

NOTE.—The unlettered areas in fig. 1 are parts of the meso- and metathorax, which are seldom if ever referred to in descriptions, and I therefore ignore them. The shaded space indicates a very deep impression between the meso- and metathoracic regions.

I may add that—

the *prothorax* includes the areas *a* and *k*.

the *mesothorax* „ „ *c, d, and e* in fig. 1, *n* and *l* in fig. 2.

the *metathorax* „ „ *f* in fig. 1, *o* and *m* in fig. 2.

the *propodeum* (*g* in both figures) is an originally abdominal segment transferred to the thorax in pupation.

The thorax of a Saw-fly can easily be broken up into its three constituent parts of pro-, meso- and meta-thorax. If the front and middle coxæ are seized in two pairs of pincers and pulled apart, the pro- and mesothorax part company. Similarly by tearing the middle coxæ away from the hind coxæ the mesothorax can be separated from the metathorax. The so-called propodeum, though theoretically an *abdominal* segment, is so firmly attached to the metathorax, that when the abdomen is broken off (*e. g.*, in a dried specimen by pushing it roughly downwards) the propodeum always remains with the thorax.

In fig. 1, *h, h*, the “cenchri,” are two singular organs with some resemblance to little tegulæ. They are always present in *Tenthredinidæ*, but I cannot find that their function has as yet been discovered. They belong to the metathorax, and mark its base.

The structure of the abdomen in *Hymenoptera* generally has of late been thoroughly investigated afresh by Dr. E. Zander (*Zeitschr. f. wissenschaftliche Zoologie*, Leipzig, 1899 and 1900). In both sexes of *T. mesomela* the first five segments are quite simple, each consisting of a dorsal and a ventral plate, the former considerably overlapping the latter, and forming together with it a regularly “annulus.” Then comes in the *female* a 6th segment, slightly differing from those preceding, in that the ventral plate is smaller, more overlapped by the dorsal, and with its apical margin excised on each side of a central projection (sometimes called the “hypopygium”). Then—I still speak of the ♀—we have a 7th dorsal plate of normal form, but the ventral plate is reduced to a narrow wire-like strip or pair of strips, to which are attached the “saws.” The 8th dorsal plate again is nearly normal in form, except that its apical margin is emarginate, and here it is not, as in



the other segments, joined to the following segment by a pellucid extensible membrane, but as it were "soldered" to it immediately, so that the two segments, dorsally viewed, look like one. The ventral plate of segment 8 is represented by a pair of "wires" like those of segment 7, bearing attached to them the so-called "supports" or back pieces of the saws, and also by the chitinous and pilose (bivalved) *sheath* which encloses laterally both the saws and their supports.\* The 9th dorsal plate already mentioned forms the superior apex of the abdomen; it has no chitinized ventral plate corresponding to it, but from under its apical margin (low down on each side) spring two pilose and palpiform (ventral?) processes which are called the *cerci*.

The ♂ abdomen at first sight appears to consist of seven pretty simple "annuli," on dissection, however, it will be found that the apparent last dorsal plate is the 7th and the last ventral the 8th. The true 7th ventral plate is concealed, and, like most concealed plates, modified in form; it consists of two lateral subtriangular lobes united by a narrow basal band, in other words, it is excised to such an extent as to be practically bisected. The 8th (apparent 7th) or apical segment is very large and convex externally, forming a sort of saucer under the genitalia, and completely hiding them from below. The dorsal 7th plate is not really apical, though it looks so. Under it lies, nearly but not quite concealed, the true apical plate bearing *cerci* as in the ♀; and also, quite out of sight, the vestiges of yet another dorsal plate, the 8th, so that the plate with the *cerci* attached is, as in the ♀, the 9th. This 8th plate, though I have repeatedly dissected specimens, escaped my notice till I had read Zander's paper of 1900, but I have now satisfied myself by a fresh investigation that it is really present in *Tenthredo*, and doubtless in the other genera. In *T. mesomela*, ♂, what I take to be the remains of dorsal plate 8 appear as two lateral subtriangular scraps of very deep green chitinous substance, united by a frail belt of transparent almost colourless membrane.† Dorsal plate 9 is chitinized along its lateral margins, but becomes membranous (though pilose) at the apex; its base and centre are also thin and transparent. The *cerci* are formed and placed as in the ♂, but are smaller and less conspicuous. These two plates (8 and 9) seem to be very much the same in *Tenthredo* as they are in the genera which Zander has examined, viz., *Cimbex* and *Sirex*.

The "neururation" characters of both wings must of course be mastered by any one wishing to determine *Tenthredinidæ*, but they are often a great stumbling block to beginners through their variability. This, however, only applies to certain of the nervures. Those whose direction is *longitudinal* seem to be thoroughly constant; and even of the *transverse* nervures those *nearest to the bases* of the wings seem to vary little, if at all. The more *apical* transverse nervures, however, are very liable to appear and vanish abnormally in particular specimens, and in this respect irregularity is more common in certain species than in others. It is unlucky that the nervures whose presence

\* The "sheath," together with dorsal plates 8 and 9, forms a complete annulus of chitin round the apex of the insect's body when the saws, &c., are retracted.

† cf. the structure of ventral plate 7 described above.

or absence is perhaps the most easily observed characteristic of particular genera (the "transverse radial" and "transverse cubital" nervures of the upper wing) are especially liable to vary abnormally in individuals. Specimens with "two radial cells" in one wing and one in the other, or "three cubitals" in one and "four" in the other are far from infrequent, and are often very puzzling even to old collectors, though less so in proportion to one's familiarity with other characters.

In my next paper I hope to deal *in extenso* with the chief wing-characters, and then go on to tabulate the British genera according to the system of Pastor Konow.

Woking: November, 1902.

*Psectra diptera*, Burm., in Scotland.—I have to record the capture of a male example of this rare Neuropteran, which I found in the sweep-net, while sweeping for *Coleoptera* on the banks of the Nith here, between Kingholm and Kelton on July 29th last. Mr. McLachlan has kindly examined the specimen, and confirms my identification. It is the first Scottish and third British specimen recorded. The late Mr. J. C. Dale took the first in 1843, in Somersetshire, and the second is recorded from Wexford in 1900, by Mr. King in Vol. xi (2nd series) of this Magazine, page 228. It is also a scarce species on the Continent.—BERTRAM MCGOWAN, Dumfries: December 10th, 1902.

A few "*Neuroptera*" from south-west Ireland.—In June, 1902, the Rev. A. E. Eaton made a short visit to the famous Killarney district, and collected a very few Neuropterous insects. I understand that Mr. King is preparing for the Royal Irish Academy a second edition of his List of Irish *Neuroptera*, so I venture to record the few taken by Mr. Eaton, on chance that some slight local information may prove of interest.

TRICHOPTERA:—*Limnophilus centralis*, Curt., and *L. auricula*, Curt., Killarney, June 12th. *Crunacia irrorata*, Curt., Tore Falls, June 12th. *Hydroptila femoralis*, Etn., Killarney, June 12th. *Oxyethira costalis*, Curt., Killarney, June 12th. *Adicella reducta*, McL., Killarney, June 12th. *Hydropsyche lepida*, Pict., Blarney, June 20th. *Neureclipsis bimaculata*, L., Killarney, June 12th. *Polycentropus flavomaculatus*, Pict., Killarney, June 12th. *Tinodes wæneri*, L., Blarney, June 20th. *Rhyacophila dorsalis*, Curt., Blarney, June 20th. *Agapetus fuscipes*, Curt., Killarney, June 12th. *A. comatus*, Pict.?, Valentia, June 16th.

PLANIPENNIA:—*Chrysopa alba*, L., Tore Falls, June 12th. *Coniopteryx tineiformis*, Curt., Muckross, June 13th.

PSOCIDÆ:—*Cacilius flavidus*, Steph., Killarney, June 12th. *Elipsocus* (*Mesopsocus*) *unipunctatus*, Müll., Cahirciveen, June 13th. *E. abietis*, Kolbe?, Valentia, June 16th.

EPHEMERIDÆ:—*Baëtis pumilus*, Burm., Farranfore Junction, June 14th. *Heptagenia venosa*, F., Tore Falls, June 12th. *Ecdyurus sulphurea*, Müll., Killarney, June 12th.—R. McLACHLAN, Lewisham, London: November 23rd, 1902.

*Philopotamus montanus*, race *insularis*, *McLach.*, at *Salcombe*.—Amongst some insects recently sent by Mr. Guernonprez for determination, I found one of a *Philopotamus*, taken by him some time ago at Salcombe, S. Devon, which it is scarcely possible to separate from the Guernsey form that I was formerly inclined to consider a distinct species, and named *Ph. insularis*. It will be remembered that in notes on the Channel Islands *Trichoptera*, published in this Magazine for 1892, p. 5, I abandoned the idea of specific distinction, and I think wisely, having regard to the great tendency to local colour-variation exhibited by *Ph. montanus*. Mr. Guernonprez took only one example, and no other form of *montanus* at Salcombe, therefore it is highly desirable that further examples from the same locality be examined.—ID.

*Ceromasia Wulpii*: a correction.—It is necessary to make a small correction of my "Note upon *Masicera virilis*, Rdi.," which appeared in the October (1902) number of this Magazine; I there, p. 227, quote Mr. S. Bischof's report upon my specimens, as follows: "*Ceromasia Wulpii*, B. and B., = n. g., or *Vibrissina Wulpii*, C. and B., = *sordidisquama*, Zett." It appears that I misread some of Mr. Bischof's abbreviations with the result that I have made nonsense of a perfectly definite statement which should have been translated as follows: "*Ceromasia Wulpii*, B. and B., = n. g., near *Vibrissina*. *Wulpii*, B. and B., = *sordidisquama*, Zett." The further quotation which I there rendered as "n. g., or *Vibrissina*, n. sp., or *Ceromasia sordidisquama*, Ztt.," should have been "n. g., near *Vibrissina*; n. sp., near *Ceromasia sordidisquama*, Ztt."

This is all clear enough now, and it appears therefore that Mr. Bischof is satisfied that the name by which the species should be known is *sordidisquama*, Ztt., though how Zetterstedt's species has been recognised I do not know. At present it can be safely left in the genus *Ceromasia*, although I am quite prepared to accept a new genus for it, which shall be put near *Vibrissina*, instead of in the section to which *Ceromasia* belongs.—COLBRAN J. WAINWRIGHT, Handsworth, Staffs.: November 30th, 1902.

*Leucania vitellina* near *Canterbury*.—It may perhaps interest you to record that in October this year at Bifrons, Canterbury, we took two specimens of *Leucania vitellina*. With great difficulty I persuaded my friend Mr. B. A. Bower to accept one of them.—J. F. GREEN, West Lodge, Blackheath: November 17th, 1902.

*Lateness of the Season of 1902 (Lepidoptera)*.—There is scarcely any ivy worth looking at in the immediate neighbourhood of Dovercourt, but a friend of mine who lives at Bradfield, about eight miles from here, has a quantity in his gardens, one very large bush standing in the middle of the lawn. The evening of the 7th instant being fine, calm, and mild, I paid it a visit. It is a late flowering variety, and I found it in perfect condition, and had visions of *D. rubiginea*, *X. semibrunnea*, and other good things, which, however, I regret to say, were not realized. *Anchoscelis pistacina* was present in small numbers and still in good condition, which I was rather surprised at, as I had taken it at sugar on the 13th ultimo, when most of them were already poor. In ordinary seasons they are usually to be met with early in September. *Xanthia ferruginea* was scarce, and so worn as to be hardly

recognisable. *Cerastis vaccinii* and *spadicea*, and *Phlogophora meticulosa* were numerous and fine, *Scopelosoma satellitia* and *Noctua C-nigrum*, one example of each, surely very late for the latter. But what I was most astonished at this evening was to beat four half-grown larvæ of *Lycæna argiolus* into my umbrella, and three of these have not yet changed to pupæ. On the 1st instant I found a small larva of *Mamestra persicariæ* on a cultivated variety of the sea buckthorn. It is now about half grown, and feeding on *Euonymus*.—GERVASE F. MATHEW, Dovercourt: November 14th, 1902.

*New locality for Notodonta cucullina*.—Taking it all round this has been a very poor year for autumnal larvæ. I went to the woods on August 26th, and after thrashing the oaks, &c. for about three hours only got one small larva of *Eurymene dolobraria*, one *Biston betularia*, and two or three *Halias prasinana*, so I gave it up as a bad job. But I beat a rather fresh-looking *Tethea subtusa* from oak (near aspen), and saw *Limenitis Sibylla* on the wing—very late for both.

On September 20th I went to the woods again, and beat for larvæ with nearly the same result—the ordinary autumnal species were not to be had—and so, after a couple of hours' work, having only obtained a few of *Zerene adustata* from spindle, I thought I would give it up, when I passed a maple bush growing under some oaks, and gave it a last despairing whack, when down fell a fine full fed larva of *N. cucullina*, the first I have ever taken, and an insect new to this district. This raised my spirits, and I beat all the maple bushes I came across for the next hour, but did not get another. Of course this was very late for it, but now I know it occurs here, I hope I may be able to find ova next July.—ID.

*Hymenoptera Aculeata at Woking on September 26th*.—I started out in the morning of the 26th ult., when the fog, which was very dense early, had cleared off, leaving a nearly cloudless sky, and took a sweeping net with me in hopes of being able to collect a few *Hemiptera*. I was very much surprised on walking by the side of a sandy bank facing south to see some specimens of *Amnophila campestris* flying along just as they would in July. This called my attention to the bank, and I noticed a *Pompilus* moving on it, and after a time I found numbers of fossorial *Hymenoptera* running and flying about, but the difficulty was to catch them, the owner having supported the bank by covering it over with galvanized iron netting. A *Pompilus* is never an easy insect to catch, but when it has the opportunity of diving under iron netting whenever it likes, it affords sport difficult enough for the most fastidious, especially when one is only armed with a sweeping net. I spent two hours in catching a very few specimens, although there were really a great many about. As I do not remember ever seeing so many fossorial species at such a late date I think it may be of interest to record them. The following is a list of the species captured and observed:—*Pompilus (Evagethes) bicolor*, Lep., ♀, 4, *P. gibbus*, F., ♀, 3, *Salix pusillus*, Schiödte, ♀, 1, *S. parvulus*, Dhlb., ♀, 1, *Ceropales maculatus*, F., ♀, *Miscophus concolor*, Dhlb. (common), *Amnophila sabulosa*, ♂ ♀, many, *Crabro Wesmæli*, ♀, *Diodontus luperus*, Shuck., ♀. The following *Anthophila* also occurred:—*Colletes succincta*, ♀, apparently quite fresh! *Halictus leucozonius*, Schr., ♂, *zonulus*, Sun., ♂, 4, *notatus*, Kirb., ♂, *villosulus*, Kirb., ♂, *punctatissimus*,



Schk., ♂, *minutus*, Kirb., ♂, *minutissimus*, Kirb., ♂, *Panurgus calcaratus*, Scop., ♂ ♀, *Nomada solidaginis*, Pz., ♀. Could I have caught more of the many red bodied *Pompili* which I saw I should doubtless have added several other species.—E. SAUNDERS, St. Ann's Woking : October, 1902.

*Hymenoptera Aculeata in North Wales.*—Among some *Aculeates* which Colonel Yerbury kindly collected for me in North Wales during last summer, the following species are worth recording:—*Tachysphex unicolor*, Pz., Llanbedr, Barmouth (July, August); *Trypoxylon attenuatum*, Sm., Barmouth (June); *Nysson spinosus*, F., Barmouth (June, July); *Cerceris arenaria*, L., Harlech (September); *Odynerus spinipes*, L., Llanbedr, Harlech (July); *Prosopis confusa*, Nyl., Barmouth (July); *Andrena proxima*, Kirb., Barmouth (June, July); *A. denticulata* ♀, Barmouth (September); *Epeolus rufipes*, Thoms., Barmouth, Harlech (September); *Cœlioxys acuminata*, Nyl., ♀ Harlech (September); *Megachile versicolor*, Sm., ♀ Harlech (September); *Osmia parietina*, Curt., ♂ Llanbedr: of this rare species, a single, much-exposed specimen was taken on the 2nd of July; *O. aurulenta*, Pz., Llanbedr (July); *Anthophora furcata* ♂ Llanbedr (July).—ID.

*Aculeates in the Midlands.*—In my garden on July 2nd I captured a single male of *Crabro cetratus*, Shuck., this is I believe the first record of this rare insect in the Midlands. Between August 26th and September 17th, *Salix pusillus*, Schiödte, occurred freely in a sand-pit at Moseley; only one male was taken, but over 50 females, six of them with their prey (a small brown spider). In the same spot four additions to our Moseley district were captured, viz.: *Tachytes pectinipes*, L., *Entomognathus brevis*, v. d. L., *Crabro 4-maculatus*, and *albilabris*, F., of the last-mentioned 20 females; and a single female of *Gorytes tumidus*, Pz. A short visit to Wyre Forest on July 17th produced fair results. From posts (old railway sleepers), *Osmia cœrulescens*, L., *Stigmus Solskyi*, Mor., *Psen pallipes*, Pz., *Pemphredon lethifer*, Shuck., *Trypoxylon attenuatum*, Sm., and *clavicerum*, Lep., one *Agenia hircana*, F., female (on decayed tree), *Pussalæcus corniger*, Shuck., and a very curious specimen of *P. gracilis*, Curt., having one antenna black and the other flavous.—R. C. BRADLEY, Moseley, Birmingham : December, 1902.

*Chrysidids in the Midlands and at Barmouth.*—Records of *Chrysidids* are so few, and those given usually from Southern and Eastern localities, that a note of those taken in other districts this season may prove of value, although there are no rarities amongst them. In my garden, *Ellampus æneus*, F. (a single specimen), *auratus* (some very small), *Cleptes pallipes*, Lep., seen, not taken. Wyre Forest, *Chrysis cyanea*, L., *fulgida*, L., on posts, three taken, several missed, very active. This seems to be a Wyre species, as I have taken it there before. Barmouth, *Hedychridium minutum*, Lep. (3), *Chrysis viridula*, L. (2), *Ruddii*, Shuck. (4). A fine specimen of *pustulosa* was taken, but afterwards unfortunately lost.—ID.

*Hemiptera, &c., at Rotherfield Peppard, Henley-on-Thames.*—During the past few months I have taken the following *Hemiptera* within a short distance of my house; some, of course, are common, but several of the captures are of consider-

able interest: *Corimelana scarabaeoides*, not uncommon in early spring in a heap of flint stones; *Podops inunctus*; *Scirius bicolor* and *S. morio*; *Gnathocnus albomarginatus*; *Pentatoma viridissimum*; *Strachia oleracea*, a red variety which at first sight resembled *S. festiva*; *Podisus luridus*, rare, by beating hedges; *Acanthosoma interstinctum*; *Syromastes marginatus*; *Verlusia rhombea*; *Dasycoris hirticornis*; *Corizus parumpunctatus*, very common by sweeping in one or two spots; *Berytus minor*; *Peritrechus luniger* and *P. nubilus*; *Drymus brunneus*; *Gastrodes ferrugineus*; *Reduvius personatus*, of this rare species I have taken three specimens, one on my doorstep, and the other two flying to light; *Nabis lativentris* and *N. ericetorum*; *Temnostethus pusillus*; *Miris calcaratus*; *Phytocoris tilia* and *P. ulmi*; *Calocoris bipustulatus* and *C. roseomaculatus*; *Lygus Kalmii* and *L. pratensis*; *Camptobrochis lutescens*; *Liocoris tripustulatus*; *Rhopalotomus ater*; *Pilophorus perplexus*; *Dicyphus globulifer*; *Heterocordylus tibialis*; *Harpocera thoracica*; *Heterotoma merioptera*; and some others not determined.

*Coleoptera* seem somewhat scarce in the neighbourhood; the following are perhaps worth mentioning:—*Harpalus azureus*; *Homalopia ruricola*, one specimen on a road; *Baris picicornis*, fairly common on *Reseda lutea*; *Rhynchites sericeus*, a few by beating hedges, in company with large numbers of *R. æquatus*; *Phyllotreta atra*; *Thyamis gracilis*; *Chrysomela hyperici*; *Cryptocephalus moræi*; *Apion ebeninum*, *marchicum*, *varipes*, and *Spencei*; *Hypera murina*; *Polydrusus micans*; *Balaninus turbatus*; *Strophosomus faber* (in some numbers on the outside of the window panes of my house); *Micrurata melanocephala*, in numbers on black-thorn bloom; *Nitidula rufipes* (in old boxes); *Cistela luperus*; an immaculate form of *Subcoccinella 24-punctata* (*Lasia globosa*) is found rarely; *Lampyris noctiluca* is fairly common, the male flying to light; I have seen the female displaying her light as late as November.—W. W. FOWLER, Rotherfield Peppard Rectory: October 13th, 1902.

*A melanic form of Miris virens*, Linn.—Since the publication of my note on the dark aberration of *Miris lævigatus* captured by me in Kent (E. M. M., 1902, p. 224), I have been interested to hear from Mons. H. Schouteden, of Brussels, that a similar form of *M. virens* Linn. (a species closely allied to *lævigatus*, but not yet known as British), was discovered some years ago in Holland, and was described by M. Fokker in the Dutch "Tijdschrift voor Entomologie" (xxviii, p. 54) as "var. *nigrofusca*, entirely brown-black." Only a single specimen was known to M. Fokker, which he captured at Leyden, but M. Schouteden has also taken a specimen at Tervueren, Belgium, as mentioned in some notes on Belgian *Heteroptera* published by him in the "Annales de la Soc. Ent. de Belgique" for 1900, of which he has kindly sent me a copy. Two other interesting records contained in these "notes" are those of the occurrence of *Phytocoris Reuteri*, Saund., at Brussels and Boendael, and of *Gastrodes abietis*, L., on walnut (*Juglans*) at Marbesle Château. Both *G. abietis* and *ferrugineus* have hitherto only been known here as attached to Conifers, and they are only so recorded by Puton in his "Hém. Het. de France."—F. B. JENNINGS, 152, Silver Street, Upper Edmonton, N.: November 4th, 1902.

*Coleoptera taken near Chesham and Tring*.—During the past twelve months I have been fortunate enough to secure two examples of *Apion annulipes*, Wenck.,

both females : one was taken in October, 1901, by sweeping the close low growing herbage, characteristic to a large extent of the chalk hills ; the other was swept from *Origanum vulgare* in July last. The following captures have also been made in the neighbourhood :—*Homalota languida*, Er., in cut grass, *H. validiuscula*, Kr., *H. testaceipes*, Heer, and *H. testudinea*, in dead leaves ; *Bolitochara lucida*, Grav., and *B. bella*, Märk., in old stumps ; *Oligota flavicornis*, Lac., *Trichophya pilicornis*, Gyll., in sand-pit ; *Quedius lateralis*, Grav., *Staphylinus stercorarius*, Ol., *S. latebricola*, Grav., *Medon fuscus*, Mannh., *Stenus crassus*, Steph., *S. fuscicornis*, Er., *Platystethus capito*, Heer, *P. nitens*, Sahlb., *Acidota cruentata*, Mannh., one in rotten leaves, *Homalium planum*, Payk., *H. striatum*, Grav., *Agathidium marginatum*, Sturm, *A. convexum*, Sharp, *Cyrtusa pauxilla*, Schmidt, *Anisotoma rugosa*, Steph., *Colon serripes*, Sahlb. ; *Smicrus filicornis*, Matth., a single example in decaying leaves ; *Cartodere filiformis*, Gyll., in damp cupboard of an old house ; *Phleophilus Edwardsi*, Steph., *Longitarsus lycopi*, Foudr., *L. pulex*, Schr. ; *Epi-trix atropæ*, Foudr., very plentiful on *Atropa belladonna* and *Solanum dulcamara*. *Miarus graminis*, Gyll., has been this year more than usually abundant, in the flowers of *Campanula glomerata*, being for once much commoner than its congener, *M. campanulæ*, L. ; *Ceuthorrhynchus euphorbiæ*, Bris., was found on *Veronica chamædrys*, and a single specimen of a *Ceuthorrhynchus*, found in flood refuse, must, I think, be referred to *C. punctiger*, Gyll. ; *Ceuthorrhynchidius nigrinus*, Marsh., was fairly plentiful in dry dead leaves in October ; *Xyleborus Saxseni*, Ratz., was taken on the wing.—E. GEO. ELLIMAN, Chesham : November 18th, 1902.

*An additional locality for Lathridius Bergrothi, Reitt.*—I have just lately submitted to Mr. Champion specimens of a *Lathridius*, which he identifies as belonging to the above species. I first noticed the insect about a year ago ; the examples taken inhabited an old and somewhat musty cupboard on my business premises here ; most of them had been trapped in jars, &c., into which they had fallen ; and were accompanied by *Corticaria fulva*, *Cartodere filiformis*, *Enicmus minutus*, *Mycetæa hirta*, various *Cryptophagi*, *Blaps mucronata*, &c.—ID.

*Lathridius Bergrothi, Reitt., at Oxford.*—In the spring of this year I took, among other small beetles in the cellar of my house, specimens of a *Lathridius* not described in Fowler's "British Coleoptera." When the Members of the Council of the Entomological Society visited the Hope Department in the Oxford University Museum in July, I asked Dr. Sharp to look at these insects, and he kindly named them as *Lathridius Bergrothi*, Reitt., a species first recorded for this country last year (Ent. Mo. Mag., xxxvii, p. 18). Later in the summer the *Lathridius* gradually became more plentiful, and in the autumn they were to be had in hundreds by beating firewood faggots and lumber in the cellar. *L. Bergrothi* has quite recently been recorded (Bull. Soc. Ent. Fr., 1902) as having been found in an old straw hat at Wimereux, Pas-de-Calais, and in old baskets in Normandy.—W. HOLLAND, University Museum, Oxford : November 29th, 1902.

*Phytosus nigriventris, Chevr., &c., at Whitsand Bay.*—At Whitsand Bay, near Plymouth, all three British species of the genus *Phytosus* may be found, and

occasionally so in considerable numbers ; but whilst *P. balticus*, Kr., and *P. spinifer*, Curt., are normal in character, all the *P. nigriventris* as yet obtained by me differ from the typical form, in that they have three or four black abdominal segments, instead of the two and half only. The appearance of the beetle is much altered thereby, and it was mixed in my collection with *P. balticus* until the publication of Mr. Champion's article on the genus in this Magazine (1899, page 1). M. A. Fauvel, to whom I sent examples, writes as follows :—"Je ne connais pas d'autres exemplaires que les vôtres du *Phytosus nigriventris* à 4 segments noirs ; c'est une var. intéressante."

I should also like to note that in the same district *Phaleria cadaverina*, Fabr., appears to be developing a dark form. The locality has long had a reputation for producing an abundance of a variety of this beetle of unusually large size, with a black "saddle-back" marking ; but in May of the present year I obtained four specimens with a more or less fuscous coloration diffused over the entire insect, one of them, indeed, being almost black, with the margins of the elytra and thorax pale. It will be interesting to see if the dark form, common, I believe, to various foreign species of the genus, can be met with again in the coming spring.—J. H. KEYS, 6, Seymour Terrace, Lipson, Plymouth : November 17th, 1902.

## Obituary.

*Prof. Adolfo Targioni-Tozzetti*, director of the department of invertebrate Zoology in the Museum at Florence, died there on September 18th, 1902, we think at an advanced age. He came of a long line of naturalists, an ancestor, who died in 1783, having been director of the Botanic Gardens at Florence. As an entomologist he did but little systematic work, but several papers on *Orthoptera* are from his pen, and also much useful information on *Aphides*, *Coccidæ*, &c. (and *Acari*). He took an active part in the Italian *Phylloxera* commission. Like many other Italian naturalists his bent lay distinctly towards physiology and minute anatomy. He was one of the founders (in 1869), and first President, of the Società Entomologica Italiana, and many of his papers were published in its *Bullettino* (among the first three Vice-Presidents we find the name of "Alessandro Enrico Haliday," who, as is well known, resided in Italy all the latter part of his life). This Society still exists, and although never very prominent, it has served to keep alive an interest in entomology (especially of a local nature) in Italy.

## Review.

SEVENTEENTH REPORT OF THE INJURIOUS AND OTHER INSECTS OF THE STATE OF NEW YORK, 1901 : by Dr. E. P. FELT, State Entomologist (being Bulletin 53 [Entomology 14] of the New York State Museum. Albany, 1902.)

For many years past we have had occasion to notice these New York Reports almost annually, both during the late Dr. Lintner's time, and since ; and almost invariably eulogistically. Dr. Lintner's assistant and successor proves himself to have been an apt pupil, and keeps pace with the times, or even on occasion anticipates results. This is an admirable Report, beautifully printed, and with excellent illustrations, many of them old friends, but some are perfectly original, and equal



if they do not excel, the best of the old ones; compare, for example, the figure of the carpenter moth and its work. There is a long chapter on the "Hessian Fly," then comes "Notes for the Year," Experimental work against the "San José Scale," &c., &c. By no means the least important is the long Appendix, devoted to the Entomological (they render it "Entomologic") exhibit at the Pan-American Exposition in 1901, and official awards in connection therewith (could we not do something of the kind in this country?). This List contains 1052 entries! In addition to the block illustrations, there are some capital plates. The index is very full; we think it is the first time we have seen the exact position indicated in an Index by *ninths* of pages, for instance, 777<sup>2</sup>, 778<sup>3</sup>, 780<sup>5</sup>, and so on.

## Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *October 20th*, 1902.—Mr. G. T. BETHUNE-BAKER, F.L.S., President, in the Chair.

Mr. C. J. Wainwright showed a specimen of *Meriama argentifera*, Meig., a Tachinid new to Britain, taken by Mr. W. J. Lucas in the New Forest on April 30th last; also *M. puparum*, F., for comparison. Mr. W. H. Flint, various *Lepidoptera*: *Larentia unangulata*, Hw., from Yardley and Hay Wood; *L. sordidata*, F., (*elutata*, Hb.) and *L. autumnalis*, Ström (*impluviata*, Hb.), showing a great range of variation; *Boarmia repandata*, L., dark specimens, one from Sutton very black but not suffused, the markings clear but all very dark grey, not brown; also others from Forest of Dean almost as black; and a dark one from S. Yorkshire which however, was brown and not grey in color; dark *Hybernia leucophæaria*, Schiff., from the Forest of Dean; *Lygris populata*, L., dark suffused specimens from near Glasgow; *Calymnia trapezina*, L., a very dark specimen from Sutton of a deep olive-green, nearly black; *Hybernia marginaria*, Bkh., nearly black suffused specimens from Sutton; *Larentia suffumata*, Hb., a suffused but not black specimen also from Sutton. He pointed out that there were among them no less than four species from Sutton with a tendency to melanism. Mr. H. Willoughby Ellis, a series of the Midland species of the Colcopterous genus *Cercyon*, Leach; 14 species out of the total of 18 found in Britain occur near Knowle, including *granarius*, E., and *quisquilius*, L. Mr. J. T. Fountain, *Lepidoptera*, including *Manestra serena*, F., from Sutton, Knowle, Sparkbrook, &c.; *Dianthæcia nana*, Rott. (*conspersa*, Esp.), from Jersey; *Eurymene dolabraria*, L., from the Wye Valley, &c. Mr. E. W. Wynn, various *Lepidoptera*, including *Hylophila bicolorana*, Fuesl. (*quercana*, Schiff.), two fine specimens taken in Wyre Forest on August 22nd last; *Agrotis neglecta*, Hb., a fine one taken at same time and place; *Zeuzera pyrina*, L., a pair from Hampton-in-Arden taken in cop, the female being double the size of the male; and *Metopsilus porcellus*, L., taken at Hampton-in-Arden June 26th last — COLBRAN J. WAINWRIGHT, Hon. Sec.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *November 10th*, 1902.—Dr. J. COTTON (St. Helen's) in the Chair.

Messrs. Oscar Whittaker (Bolton), J. R. Charnley, F.E.S. (Preston), A. G.

Wallington (Warrington), John Lea, and J. J. Richardson (Liverpool), were elected Members of the Society.

Handsome donations to the Library were announced from Messrs. J. R. Charnley, F.E.S., and H. St. J. K. Donisthorpe, F.Z.S., F.E.S. The arrangements made by the Secretary for the forthcoming Meeting to be held in Warrington having been approved, a highly interesting paper on "Some Famous Collecting Grounds" was communicated by Mr. Oulton Harrison (Wavertree), whose instructive descriptive account of various Entomological "centres" in Switzerland and Britain was rendered still more attractive by nearly 200 lantern views. Many of the typical Lepidopterous and other denizens of the Meiringen District, Lucerne, Rosenlani, etc., were enumerated, and descriptions given of favourite haunts of some of our insular insects and birds in the New, Epping, and Delamere Forests. A hearty vote of thanks being accorded the lecturer, the following exhibits were described and shown:—British *Donacia*, by Messrs. J. F. Dutton and J. R. le B. Tomlin; *Emmetica cervinata* (Wilts.), Mr. O. Harrison; *Lithosidæ*, Mr. F. N. Pierce; Hymenopterous captures during 1902, Mr. F. Birch; *Trigonogenius globulum* from Hoylelake, and *Ixodidæ* from leg of a tortoise, Mr. W. H. Jennings; *Metæcu paradoxus* and recent Coleopterous captures at Liverpool, Mr. Guy A. Dunlop; some magnificent Exotic *Lepidoptera*, and photographic slides of British Lepidopterous larvæ shown upon the screen, Mr. J. 'Jervis Richardson; and *Coleoptera* from the Sibutu and Sulu Islands, Mr. E. J. Burgess Sopp.—E. J. BURGESS SOPP, Hon. Sec.

*A Correction.*—I regret that in the account of my exhibit at the Lancashire and Cheshire Entomological Society's October Meeting, Mr. W. H. Harwood's Colechester earwig was given as *Forficula pubescens*, Serv. It should have appeared as the next species, *F. Lesnei*, Finot. The error was mine.—E. J. B. SOPP.

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THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY,  
October 23rd, 1902.—Mr. F. NOAD CLARK, President, in the Chair.

Mr. Inglis, of Clapham, and Mr. Scollick, F.E.S., of Wimbledon, were elected Members.

Mr. South, on behalf of Mr. Fowler, of Ringwood, exhibited varieties of the ♀ of *Lithosia deplana*: (1) grey in colour, with yellow costa extending to the fringe = *v. ochreatea*; (2) with fore-wings almost as yellow as *L. sororcula*, and the hind-wings only slightly tinged with grey; they were from the New Forest. Mr. Tutt pointed out that variation in the *Lithosiids* took one of two directions, either a general darkening or an intensification of the yellow. Mr. Dennis reported that on October 9th all stages of *Cyaniris argiolus* were to be found at the same place. Mr. Turner, a number of examples of *Hydriomena (Hypsipetes) furcata (sordidata, elutata)*, illustrative of local forms, and remarked upon the inconvenience caused by the continual change of the specific names. Mr. B. W. Adkin, some remarkable forms of *Pachygastria (Bombyx) trifolii* bred from larvæ taken on the Scilly Islands. One ♀ was conspicuously light, and the wedge shaped markings of the fore-wings of several males were much enlarged. Mr. Lucas showed a number

of lantern slides illustrating (1) choice spots in the New Forest, (2) Protective Resemblance in Insects, (3) various Botanical characters of interest, and (4) some of the idiosyncracies of Collecting.

November 13th, 1902.—The President in the Chair.

Mr. Colthrup, a bred series of *Lymantria monacha* originating from the New Forest, and exhibiting very beautiful black suffusion. Mr. R. Adkin had had a number of larvæ from the same source, but the few imagines he bred were quite normal. Messrs. Harrison and Main, a long bred series of *Aglais (Vanessa) urticae* from Eastbourne, Delamere Forest, and Argyleshire, and contributed notes on the characters of the several races. Those from the last named locality were generally darker. Mr. R. Adkin, a series of *Lycæna Corydon* from Eastbourne, taken between September 18th and September 25th, and called attention to the frequency of blue sealing in the ♀s; he also showed melanic forms of *Aeronycta menyanthidis* from Selby, Yorkshire. Mr. H. J. Turner, (1) a bred series of *Hypsotrophus marginellus* from Banstead Downs; he also reported it from the Roman Road, Mickleham; (2) a long and very varied series of *Pædisca corticana*, taken on a wet day in July in Epping Forest; he referred to the exceedingly perfect protective resemblance exhibited by the species as well as the great range of variation; (3) a ♂ *Pechipogon barbalis* set to show the secondary sexual characters existing in the extreme and fantastic development of tufts of hairs on the fore-legs; and (4) two varieties of *Polyommatus Icarus* from Banstead: one a small ♂ with all the basal spots of the under-side missing, the marginal markings very faint or suppressed, and only a few of the submarginal ocelli remaining; the second a ♀ with much enlarged ocelli in the submargin. Mr. Kaye, a fine ♀ variety of *Fidonia atomaria* having the ground colour very light, and much increased in area at the expense of the dark bands; and a series of *Tiliacea aurago* bred from ova laid by the only ♀ he had ever captured at Worcester Park, Surrey. Mr. H. Moore read a paper, entitled, "A visit to the Forest of Argues (Dieppe)," and showed a number of species of insects of various orders in illustration. Perhaps the most interesting were a series of dark, small, and thinly-sealed *Cænonympha arcania*, no doubt indicative of the fact that here the species was near the limit of its area of distribution. Dr. Chapman, a paper, entitled, "On Inflation in Insects," summing up the results of more than thirty years' observation and experiment. In the discussions which followed Mr. Tutt pointed out that the problem was as yet unsolved why *C. arcania* and other species characteristic of very adjacent continental areas were absolutely non-British.—HY. J. TURNER, *Hon. Secretary*.

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ENTOMOLOGICAL SOCIETY OF LONDON: November 5th, 1902.—The Rev. Canon FOWLER, M.A., D.Sc., F.L.S., President, in the Chair.

Lieutenant T. Delves Broughton, R.E., of Alderney, Channel Islands; Mr. Arthur Percival Buller, of Wellington, New Zealand, and of the Inner Temple, E.C.; the Rev. Canon C. T. Cruttwell, M.A., of Ewelme Rectory, Wallingford; Mr. R. S. Hole, of the Rectory, North Tawton, Devon; and Mr. W. E. Sharp, of Ledsham, Shakespeare Road, Hanwell, W.; were elected Fellows of the Society.

Mr. H. J. Elwes, F.R.S., exhibited, on behalf of Mrs. Mary de la Bèche Nicholl, a collection of Butterflies made by her in February, March, and April,

1902, in Southern Algeria; also a collection of Butterflies afterwards made by her in the Picos de Europa in Spain; the latter collection comprised about 85 species and was made in 25 days. Mr. Elwes remarked that these collections contained several interesting species of *Erebia*, *Lycæna*, and other genera, and included three species from Algeria not at present represented in the British Museum Collection. Dr. Chapman exhibited, and made remarks on, two Butterflies taken last July at Bejar, in West Central Spain, both notable as being very decidedly larger than any forms of the same species recorded from any other locality. He stated that one of them belonged to a form of *Lycæna Argus* (the *L. Ægon* of the British list). They were taken about one and a half miles east or south-east of Bejar on July 9th and following days. He said that he proposed to name this form var. *bejarensis*. Mr. R. South, four specimens of a large form of *Cupido minima* (*Lycæna minima*) from Cumberland, sent to the Natural History Museum by Mr. Mousley, of Buxton; also, on behalf of Mr. J. H. Fowler, of Ringwood, a series of *Lithosia deplana*, Esp., from the New Forest, showing interesting variations in both sexes, but especially in the females. It was stated that Mr. Eustace Banks had recently recorded somewhat similar aberrations of the species from the Isle of Purbeck. Mr. Hamilton Druec, a specimen of *Limenitis populi*, L., caught whilst being chased by a small bird in July, 1901, near Riga, Russia; also a specimen of *Sesamia nonagrioides*, Lefeb., bred from a larva found feeding in the interior (*vide* Fowler) of a banana. Mr. J. H. Carpenter, a gynandromorphous specimen of *Lycæna Icarus*, having the coloration of the male on the left side and that of the female on the right side, captured on Ranmore Common, Surrey, in June last; also several aberrations of this species from Ranmore Common and the Isle of Wight. He also showed specimens of *Vanessa Antiopa* bred from German larvæ, including a remarkable aberration in which the usual blue spots on the upper wings were entirely absent. Mr. H. St. J. Donisthorpe, a foreign specimen of *Quedius saturalis*, lent him by Mr. Keys, of Plymouth, and a British specimen taken by himself at Gravesend in 1891; also for comparison a specimen of *Quedius obliteratus* taken at Plymouth. He said that most of the specimens of, so called, *Quedius saturalis* in British collections were really *Q. obliteratus*. Mr. Pickett, a remarkable series of *Angerona prunaria*, the result of four years' inter-breeding between dark males from Raindean Wood, near Folkestone, and light-coloured females from Epping Forest; also unicolorous light orange-yellow males, light yellow females, dark orange males sprinkled with black, and other unusual aberrations. Professor E. B. Poulton, F.R.S., a series of lantern slides prepared from negatives taken by his assistant, Mr. A. H. Hamm, of the Hope Department, and Mr. Alfred Robinson, of the Oxford University Museum. The slides represented a series of the larvæ and imagines of British moths photographed under natural conditions. Mr. Hamm's photographs of moths clearly showed the attitude of the insect in relation to the background which it had selected. Mr. Robinson's photographs similarly represented the larvæ of species of British moths in their natural attitudes upon the food-plants. He also showed a representation of the pupa of *Limenitis populi* prepared from Portschinski's figure and description, and explained the highly ingenious hypothesis by which the appearances are accounted for by the Russian naturalist. Mr. C. O. Waterhouse communicated a paper by Mr. L. R. Crawshaw, entitled, "On the Life History of *Drilus flavescens*, Rossi."—H. Goss, Hon. Sec.



# INSECTS, ESPECIALLY PARASITIC HYMENOPTERA, NOTICED IN THE NEW FOREST IN AUGUST, 1901.

BY CLAUDE MORLEY, F.E.S., &c.

No locality in Britain, probably, has yielded its treasures to so large a variety of entomologists as has the New Forest, yet its insect fauna is really very incompletely known; with the exception of one or two Orders, the Victoria History of Hampshire—if indeed these “histories” may be taken as reliable *resumés*—only too clearly demonstrates how fragmentary is our knowledge of this district, which yearly teems with visiting collectors and boasts of a few resident specialists. August, 1901, was almost an ideal month at Lyndhurst, which was my head-quarters; and all kinds of insects were abroad in great force. Although I devoted myself to the *Ichneumonidæ*, of which no mention is made in the “history,” I was also able to pick up a great number of interesting things of other kinds, and I trust that the following account may add another fragment to the county’s fauna.

Lyndhurst in August is no mean rendezvous for brothers of the net and pin, and I owe many of the best COLEOPTERA taken to the presence of the Rev. H. S. Gorham, Prof. Beare, Mr. Donisthorpe, and Mr. Tomlin. To notice a few of the better beetles in the order of their capture:—*Mordellistena brunnea* occurred on flowers of *Heracleum* and *Angelica*; *Monotoma quadricollis* and *Sipalia ruficollis* were swept; the local *Bembidium tibiale* and *B. decorum* sluiced by streams; *Philonthus succicola* found among fungi, *P. umbratilis* upon a defunct cow, *P. splendidulus* beneath beech bark in Denny Wood; *Galeruca viburni* on *V. opulus* in several directions; *Cassida vibex* swept from *Centaurea*; *Phyllobrotica quadrimaculata* was common on *Scutellaria* at Matley Bog, where, upon *Angelica* flowers, *Cetonia aurata*, *Strangalia quadrifasciata*, and *Aromia moschata* were not uncommonly met with; there also *Orchestes iota* on *Myrica gale*, *Plectroscelis subcærulea*, and *Metæcus paradoxus* in a nest of *Vespa vulgaris*, were found; the water net brought up *Haliphys fulvus*, *Deronectes depressus* and *D. 12-pustulatus* about Bank; *Leistotrophus nebulosus* occurred in very rotten fungus and also in Miss Chawner’s garden; the local *Mycetophagus atomarius* and *Cerylon angustatum* in beech fungi; *Aphodius sticticus* was in horse dung; *Bagous glabriorostris* var. *nigritarsis* on water plants at Gritnam Wood; and, last of all, I cut a fine *Mesosa nubila* out of a rotten piece of fallen branch, the middle of which was still hard, in the same locality. The renowned Lymington Salterns provided only *Bryaxis Waterhousei* and larvæ of *Agriotes sordidus*.

There was a conspicuous paucity of HEMIPTERA, and common species were often rare or absent: *Calocoris ticinensis* was not rare, with one *Corizus maculatus*, on skullecup in Matley Bog, where *Picromerus bidens* and *Thamnotettix cruentata* were swept from Bog Myrtle; *Pisma quadrata* swarmed in the above Salterns; *Coranus subapterus* turned up in a sand pit, with *Deltocephalus pulicaris*, at Lyndhurst. I heard that the local *Cicada montana* had been captured a few days before my arrival.

*Acheta sylvestris*, swept from bracken by Professor Beare, and *Ectobius Panzeri*, which was abundant everywhere on heather, were the only unusual ORTHOPTERA found.

With Mr. F. C. Adams for my guide I could not fail to secure several of the local species of DIPTERA, common kinds of which were a perfect pest upon the masses of *Angelica* in Matley Bog, at that time of year undoubtedly the best locality in the Forest. Here occurred *Baccha elongata*, *Sericomyia borealis*, *Xylota segnis* and *X. sylvarum*, *Dinera grisea*, *Dexia ferina*, *Alophora hemiptera*, *Spilogaster atripes*, *Hylemyia flavipennis* with plenty of *Sapromyza præusta*, and, on *Scutellaria*, an example of the rare *Trigonometopus frontalis*. *Chrysops quadratus* was swept from rough grass in the same locality, where *Anthrax fenestratus* sunned itself on sandy paths, *A. paniscus* visited *Angelica*, and *Tabanus bovinus* threatened dire injury. Of the rest, *Actinia tibialis* was caught at Lyndhurst, *Dioctria linearis* at Hursthill, *D. atricapilla* at Denny, *Hybos grossipes* and *Oreogeton flavipes* were common, *Pecilobothrus nobilitatus* and *Argyra argyria* affected streams, *Pipunculus fluvipes* at Hursthill, *Pyrophæna rosarum*, *Ræselia pallipes*, *Homalomyia Roserii*, *Sciomyza albocostata* and *Sapromyza longipennis* were all taken about Lyndhurst. *Hippobosca equina* is said to be quite three quarters rarer than it was ten years ago. (Other captures of Diptera are mentioned by Mr. Adams at p. 84, vol. xxxviii).

ODONATA were numerous but in small variety: *Orthetrum carulelescens* flew commonly with scarlet forms of *Sympetrum striolatum*, and *Calopteryx splendens* and *Cordulegaster annulatus* were also noticed. A *Leuctra* was not uncommon on *Myrica* at Brockenhurst; *Hemerobius micans* and *Sisyrha Dalii* occurred at Hursthill by the Highland Water. Trichoptera were remarkably scarce, the only locally uncommon ones being *Limnophilus centralis* at Philips Hill and *Lype phæopa* beaten from dead heather at Matley Bog.

I made no notes on the LEPIDOPTERA, which have been so fully worked, but *Argynnis Paphia* var. *Valezina*, *Eubolia palumbaria*,

*Ephyra omicronaria*, and *Pyrausta purpuralis* were seen on the wing; *Rhodophæa suavella* was common on ragwort flowers; and the larvæ of *Euclidia mi* and *Psyche villosella* were swept from grass at Matley Bog.

Much closer attention was paid to the HYMENOPTERA, and in collecting the Aculeates I had the advantage of two or three excursions with the Rev. F. D. Morice. Again the *Angelica* at Matley was prolific of some nice species of the latter, including *Mutilla europæa* ♂ ♂ and *Myrmosa melanocephala*, large ♂ ♂, *Pompilus viaticus* (which often hides beneath the flower when disturbed), a ♂ of the very rare *P. unicolor*, *Mimesa bicolor*, *Crabro vagus* and *C. pubescens*, and one ♀ *Prosopis palustris* (not, I believe, known to occur outside of the eastern counties before); at the same favoured spot *Eumenes coarctata* was taken flying swiftly over heather, *Halictus zonulus* at *Scabiosa* flower, and three or four *Macropis labiata*, flying early in the month to the yellow flowers of *Lysimachia*; one of these gave me a sharp sting, but the pain was very evanescent. In a sand pit hard by *Pompilus rufipes*, *Ceropales maculatus*, *Andrena argentata* with its parasite the rare *Nomada alboguttata* put in an appearance in some force. About Lyndhurst *Pseudagenia punctum*, a very great rarity, was taken in Mr. Adams' garden; *Stigmus Solskyi*, *Nysson dimidiatus*, *Andrena fuscipes*, and *Dasypoda hirtipes* were attracted to *Heracleum* flowers, while *Halictus minutissimus* and *Colletes succincta* affected those of *Erica*; sandy banks produced *Halictus punctatissimus*, *Nomada obtusifrons* and *Epeolus rufipes*.

The year was too far advanced to find many of the fine local *Tenthredinidæ*, which Miss Chawner kindly showed me in her collection, in the imago state; nevertheless, the striking *Cræsus varus* and *C. septentrionalis*, *Nematus betulæ*, *Abia fasciata*, *A. sericea*, *Hylotoma gracilicornis*, *H. cæruleipennis*, and *H. ustulata* all occurred more or less freely on flowers among alders in Matley Bog; *Emphytus tibialis* was found at Brockenhurst, and in Denny Wood, and *Athalia spinarum* on *Angelica*, *Nematus myosotidis* on black poplar, *N. lucidus* and *N. capræ* with *Pachyprotasis rapæ* turned up at Lyndhurst. The *Braconidæ* included *Opius nitidulator*, Nees, several in Mr. Adams' garden with both sexes of the common *Chelonus inanitus*, L.; *Heterogamus dispar*, Curt., was swept from heather; *Chænon anceps* and *Meteorus abdominalis*, Nees, var. swept in Queen's Bower; *Apanteles obscurus*, Nees, was on *Angelica* at Lymington, and *Bracon fulvipes* on the same flowers at Matley Bog. The only Proctotrypids noticed were *Codrus apterogynus* swept at Hursthill; *Parnesius elongatus*, Thoms., on heather in Butt's Lawn; *Diapria verticillata*, Latr., on

*Heracleum* at Lyndhurst; and the curious *Gonatopus pedestris*, Dalm., in a gravel pit at Lymington. *Chaleis minuta*, L., occurred on *Heracleum* flowers at Lyndhurst on the first of the month; and a conspicuous black Chalcid, with great flavus scutellum bearing apical setæ, and infumate wings was common in Matley Bog.

*Ichneumonidæ*, to which my attention was primarily directed, were in great profusion, and I succeeded in collecting over four hundred and fifty specimens of this family during the month. Needless to say the majority of these puzzling insects still lie temporarily perdu and unnamed. Such as belong to the Ichneumonids, however, I have been able to somewhat thoroughly investigate. *Ichneumon fuscipes* was occasionally found in Mr. Adams' garden, together with *I. confusorius*, *I. leucomelas*, *I. vestigator*, Wesm., and *I. lepidus*; *I. lautatorius*, Desv., was common in the ♂ sex at Matley Bog, but no ♀♀ occurred of this species, which is considered on the continent to be a variety of the common *I. vaginatorius*, L., no example of which was taken. *I. xanthorius*, Forst., was found at Broekenhurst; *I. terminatorius*, *I. caloseclis*, *I. bimaculatorius*, *I. faunus*, and *I. callicerus* all affected *Angelica* flowers in Matley Bog; ♂♂ of *I. fabricator* and *I. annulator*, Fab. (*curvinervis*, Holmgr.), were common on the wing; *I. chionomus* and *I. derogator* also occurred at Lyndhurst; *Amblyteles palliatorius* was abundant on *Angelica*, the ♂♂ varying very considerably in colour; *A. armatorius* was taken flying over heather. *Hepiopelmus leucostigmus* was swept from *Myrica gale* in Matley Bog, where *Anisobas hostilis*, Gr., var. *rebellis*, Wesm., turned up on a buckthorn leaf. *Probolus alticola* and *Platylabus albinus*, Gr. (*errabundus*, Gr.), appeared in Lyndhurst; *P. rufus* on bog myrtle at Matley, and *Eurylabus rufipes*, Steph., which does not seem to have been recorded since the publication of his "Illustrations" in 1835, on *Angelica* in the same locality. Of the remainder of the *Ichneumonidæ*, I shall only say that *Linoceras macrobatus* was quite common on the flowers at Matley; Bridgman and Fitch knew of but one authentic British example of this species in 1883; it is said to prey upon *Eumenes*; with it was *Cryptus tarsoleucus*. *Agrotherutes Hopei* and *Pezomachus fasciatus* were swept at Hursthill, with *Exolytus lævigatus*,\* which also occurred at Lyndhurst, with *Exetastes guttatorius*,

\* The Rev. W. Kirby, F.R.S. (Intro. to Ent., ed. vii, 151), tells us that a species of ichneumon, allied to *Alomyia debellator*, "which I have named *A. stercorator*" (? MS), oviposits in stercorarius larvae; I think, however, the insect here referred to must be one resembling *Exolytus lævigatus*, Grav., which I have myself found ovipositing in the head of a dead cow at Lyndhurst. It is extremely similar to Gravenhorst's species, but differs therefrom in its distinctly transverse and less buccate head, broader petiolar spiracles and strongly compressed anus; it is quite possibly one of Thomson's new spp. of *Atractodes* (Opusc. Ent., x, 1019). I wish to mention this here because the extremely abundant *A. debellator* has never been bred, and any indication of its hosts is valuable.—C. M.



and *E. osculatorius*, on flowers. Mr. Adams gave me *Ephialtes carbonarius*, *Perithous divinator*, *Ædemopsis (Phytodietus) scabriculus*, *Bassus letatorius*, and two fine *Xylonomus præcatorius* from his garden. *Lissonota bellator* occurred on *Heraclenn*; *Pimpla instigator* at Brockenhurst with *Glypta flavolineata*; *Pimpla flavonotata* in Denny Wood, and *P. oculatoria* at Lymington.

Ipswich: 1902.

## THE BRITISH SPECIES OF THE GENUS *OPORABIA*, STEPH.

BY LOUIS B. PROUT, F.E.S.

Probably so much has been written on this troublesome genus (Scot. Nat., iv., pp. 111-116; Ent. Rec., ix, *passim*; Ent., xxxiii, pp. 53-56, xxxiv, pp. 43-45; Trans. City Lond. Ent. Soc., ix, pp. 42-52, &c.) that Mr. Barrett did not find time to wade through it; at any rate, his remarks in the latest part of his book (Lep. Brit., viii, pp. 377, *et seq.*) show that he is not altogether clear upon the differentiation of the species, so it is perhaps worth while to call attention to one or two slips he has made.

On pp 378-9, the type form of *O. autumnata* (Bkh.), Gn., Stgr.-Rebel, No. 3381, with "the ground colour exquisite silvery-white," &c., is referred to as a "beautiful local race" of *O. dilutata* (Stgr.-Rebel, No. 3380); but the form in question (from Enniskillen, &c.) is well known to belong to the quite distinct species *O. filigrammaria*, Barrett, *pro parte* (= Stgr.-Rebel, No. 3381), and one wonders that Mr. Barrett has not heard of Mr. J. E. R. Allen's work in breeding it, crossing it with the Bolton *O. filigrammaria*, &c.; I have examined all Col. Partridge's and Lieut. Brown's material, as well as Mr. Allen's from the same place, so am not writing at random. What the insect is Mr. Barrett has taken at Norwich in company with typical *dilutata*, I have not yet ascertained, but shall hope to do so on an early opportunity; I have never yet seen *O. autumnata* or *filigrammaria* from the south or east of England.

As to *O. approximaria*, Weaver, I have not seen Mr. Kenneth J. Morton's specimens which are referred here, but Weaver's types are now in Mr. Sydney Webb's collection, and I have thoroughly studied them; they are a slightly smaller and darker race of the endlessly variable *O. autumnata*, Bkh. (? = *filigrammaria*). Mr. F. N. Pierce's "*approximaria*" was misnamed by Gregson, and was simply a dwarfed *O. dilutata*.

Regarding the distribution of *O. dilutata*, Mr. Barrett (p. 381, *tom. cit.*) gives it a very wide range, but its nearctic representative appears to be either a different species or *O. autumnata*, evidently not *dilutata*. Also in Arctic Europe, my material and researches show that *autumnata* is the chief representative of the genus.

Our only other structurally valid species is, as Mr. Barrett points out (p. 377), the one which he calls *filigrammaria*, H.-S., but of which I have been speaking above under its prior name of *autumnata*, Bkh. (Stgr.-Rebel, No. 3381); but Mr. Barrett does not make it clear that this interesting insect splits up into two very distinct races or subspecies, the large, tree-feeding type form, *autumnata*, Bkh., Gn., and the

small, heather-feeding race (or "Darwinian species") *filigrammaria*, H.-S. (Stgr.-Rebel, No. 3381a). The latter is only recorded for Britain. The former is far more widely distributed; its range, as I gave it in Trans. City Lond. Ent. Soc., ix, pp. 51-52, embraces Cheshire, Lancashire, Cumberland, Swansea (one specimen, thus one record does "exist for Wales"), Scotland (widely distributed), France (ditto), Germany (ditto), Switzerland, Austria, Norway and Sweden (abundant), Russia, and apparently Labrador and North America. Petersen, in his recently published "Lepidopteren-Fauna von Estland" (p. 129), shows that it is also not uncommon at Reval and in Northern Livonia, and doubts (judging from his own material) whether the true *O. dilutata* occurs there.

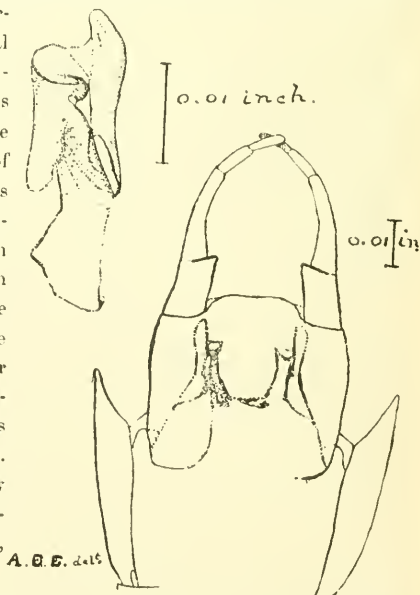
246, Richmond Road, N.E.:  
December, 1902.

### A NEW SPECIES OF EPHEMERIDÆ FROM NORWAY.

BY THE REV. A. E. EATON, M.A., F.E.S.

#### SIPHILURUS ÆSTIVALIS, *sp. nov.*

♂. Imago of similar appearance and dimensions to *S. lacustris*, Etn., but with the darker colouring deeper in tint, and the lighter markings flavescens rather than ochraceous. In the abdomen, at the posterior angles of the dorsum in most of the segments, the extreme edge of the integument is flavescens for a short space inwards, and a still shorter space forwards; and at the base of each dorsal segment, each of the lateral small triangular flavescens spaces emits an exiguous offset to the lateral margin, so that the more or less acute recurrent streaks of the darker colour tapering forwards from the posterior border are not extended to the base. Wing venuration stronger or blacker on the whole than in the afore-named species, except the roots of the hind-wings, and the thickened base of the costa, together with the cross-vein continued therefrom in the fore-wings. Fore legs piceous: hinder legs bistre-brown. Pleura dilated and produced posteriorly into acuminate points in the penultimate segment. Length of fore-wing, 14; setæ, 22 mm.



*Hab.*: Sörum, Norway, 10th of July. Plentiful at the riverside landing-stage, between 10 and 11 p.m., when both sexes were obtained.

*Details figured*:—Ventral view, without contour, of the ♂ imaginal forewings and penultimate segment, with penes in position, visible through the substance of

the forelegs—basis. A penis detached, viewed from above. The hair-lines annexed show corresponding enlargements of  $\frac{1}{100}$ th inch. Drawn after dissections mounted without pressure in Canada Balsam.

Woodlands, Seaton, Devon :  
December, 1902.

# ON THE TRICHOPTEROUS GENUS *MYSTROPHORA*, KLAPÁLEK,

BY ROBERT McLACHLAN, F.R.S., &c.

Amongst some *Trichoptera* collected in South Norway by the Rev. A. E. Eaton in July, 1902, were two ♂ and several ♀ of what at first appeared to be a *Glossosoma*, but with very extraordinary ♂ characters in the abdominal parts; the process on the 6th ventral segment short, and the anal parts symmetrical, including a pair of very large spoon-shaped, or broadly clavate (concave within) inferior appendages. These latter called to my mind figures by my fellow-worker and former pupil, Professor Klapálek of Prague (published with a brief Latin diagnosis in the “*Rozpravy Ciske Akad. Cisare Frantiska Josefa, etc.*” for 1892) of the details of a Bohemian insect, given as *Mystrophora intermedia*, g. et sp. n., which was unknown to me otherwise. When examining the only good ♂ (the other was shrivelled and immature), I detected a peculiar character in one of the tibial spurs (the inner apical spur of the hinder tibiæ), which was unusually short, broad, and like a curved blade, slightly ciliate; at that moment the specimen dropped from my fingers, and the hind-wings and abdomen could not be found! My friend Professor Klapálek gives (*l. c.*) a very long and detailed description (in addition to the Latin diagnosis); but, most unfortunately, his instincts prompt him to use his vernacular (Czech) in most of his writings, and as this is not understandable by any except an infinitesimal fraction of entomologists, I called his attention to my discovery, which was new to him, and he very kindly supplied the drawing reproduced here, taken specially from a peculiar position in order to show more clearly the form of this unusual spur, which is not present in *Glossosoma*, and is, with the abdominal features, a good distinctive point. I know not at present how to separate the females of *Glossosoma* and *Mystrophora*. Professor Klapálek alludes to some minute neural character which at present I cannot recognise. *Mystrophora* has no “valve” at the base of the anterior wings of the ♂, neither have some species of *Glossosoma*. The original



diagnosis says "Inter *Glossosoma* et *Agapetum* intermedium." To my mind, the relationship to the former is very close, and to the latter remote. I think it probable that *G. Nylanderi*, McLach., which I do not possess, and have not seen for many years, is a *Mystrophora*.

*M. intermedia* has occurred in several localities in Bohemia, and also in the Carpathians; its northward extension to Norway is interesting.

It would seem that the generic term *Mystrophorus* was used by Förster in *Hymenoptera* in 1856. Personally, I am not inclined to make any change, on account of the difference in termination: at the same time I would not *knowingly* coin a new term differing in this point only. *Mystrophora* (Klapálek) is not included in the "Zoological Record," neither has it found its way into the just published "Index Zoologicus."

Lewisham, London :

December, 1902.

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NEUROPTERA (IN THE LINNÆAN SENSE) COLLECTED BY THE  
REV. A. E. EATON IN SOUTH NORWAY IN JULY, 1902, WITH  
SYNONYMIC AND OTHER NOTES.

BY ROBERT McLACHLAN, F.R.S., &c.

(THE EPHEMERIDE BY THE REV. A. E. EATON, M.A., F.E.S.).

In July, 1902, Mr. Eaton (accompanied by Mrs. Eaton) made a short excursion in South Norway. The primary object was an excursion *pur et simple*, according to pre-arranged plan and contract. Hence they seldom stopped two nights at the same place, and as a great deal of ground (and water) was got over in a short space of time, very little opportunity was allowed for entomological pursuits. Nevertheless, an examination of the results shows a tolerably long list of species which it is desirable to publish, and amongst them a few of considerable interest. Such a list is of importance to the few workers in Scandinavia, perhaps more so than to foreigners. Moreover, South Norway is less worked than the middle and northern portions.

The route was briefly as follows:—Entering by Christiania, thence by rail to Sandviken; road to Hønefoss and Heen; steamer to Sörum; road through the Valdres district to Lærdalsören; steamer to

Gudvangen; road to Vossevangen and Eide; rail from Vossevangen to Bergen. Collecting was done also at intermediate localities whenever opportunity offered, which was not often.

#### TRICHOPTERA.

*PHYRGANEA STRIATA*, L., Hag.—One very small dark ♂ at Fagernæs, July 12th. Although following the nomenclature employed in my "Revision and Synopsis," I always feel tempted to use Retzius' specific name *bipunctata*, which is certain, whereas *striata*, L., is by no means certain; on the other hand I never feel satisfied that *striata*, L., is *Neuronia ruficrus*, Scop., as adopted by Scandinavian and Finnish entomologists.

*LIMNOPHILUS CENTRALIS*, Curt.—Hönefos, July 9th; Vossevangen, July 19th. It is well known that Wallengren contended that this was *Phr. flava*, L.; he was possibly right.

*ECCLIPTERYX GUTTULATA*, Pict.—Grindeheim, July 14th, out of bushes by the lake-side, many examples.

*APATANIA STIGMATELLA*, Zett.—Vossevangen, on the lake-side, apparently common, all ♂.

*APATANIA MAJUSCULA*, McLach. ?—One ♀, with damaged abdomen, from Nystuen (about 3250 ft.), July 15th. The ♀ of this species is not known with certainty.

*APATANIA ARCTICA*, Bohem.—Öilo, July 13th, 1 ♀; Grindeheim, by the lake-side, July 14th, several ♀. Mr. Morton, who has recently worked at the females of boreal species of *Apatania*, considers these to belong to this apparently parthenogenetic form: they are smaller and darker than examples from Spitzbergen, Boheman's original locality.

*MICRASEMA GELIDUM*, McLach.—Maristuen, July 15th, 1 ♂, by a streamlet, in descending the hill. (A ♀, of a smaller size, from Fagernæs, July 11th, may not perhaps be of the same species.)

*HYDROPTILA FEMORALIS*, Etn.—Sörum, by the landing stage, July 10th.

*OXYETHIRA FRICI*, Klap.—Sörum, July 10th.

*OXYETHIRA COSTALIS*, Curt., var.—Vossevangen, July 19th. A curious melanie form, nearly black and without markings. Mr. Morton (who has determined the *Hydroptilidae*) considers these to represent only a local var. or race.

*BERÆA PULLATA*, Curt.—Hönefos, July 9th, in a shady bog amongst *Caltha*, etc.; Vossevangen, July 19th.

*BERÆA MAURUS*, Curt. ?—Skjervet, July 21st, at an oozy dribble draining a meadow; ♀ only, and uncertain.

*LEPTOCERUS NIGRO-NERVOSUS*, Retz.—Fagernæs, July 11th, 1 ♂.

*MYSTACIDES AZUREA*, L.—Vossevangen, July 19th.

*HYDROPSYCHE PELLUCIDULA*, Curt. ?—Fjeldheim, July 11th, out of trees below the bridge, females only, and uncertain.

*HYDROPSYCHE NEVÆ*, Kol., var. *FENNICA*, McLach.—Sörum, July 10th, a few examples, the ♂ of very small size (expanse 16--16.5 mm.). These have the dark coloration of var. *fennica*, but are even smaller than the typical *nevæ* (which I do not possess), whereas the typical *fennica* is much larger.



ARCTOPSYCHE LADOGENSIS, Kol.—Hönefos, July 9th, on the shore of the river; Fjeldheim, July 11th; one ♀ from each locality.

PHILOPOTAMUS MONTANUS, Donovan.—Fjeldheim, July 11th, 3 ♀, a dark form.

PLECTROCNEMIA CONSPERSA, Curt.—Vossevangen, ascending the first torrent west of the hotel, July 20th, many examples.

POLYCENTROPUS FLAVOMACULATUS, Piet.—Lake Spirilen, July 10th, on the steamer; Fagernes, July 11th.

RHYACOPHILA NUBILA, Zett.—Fjeldheim, July 11th; Eide, July 23rd, near a waterfall N.E. of the village; one ♂ from each locality.

MYSTROPHORA INTERMEDIA, Klap.—Lærdalsören, July 16th, by beating alders a short distance from the bank of the main river a mile or two above the town, 2 ♂, 5 ♀. One of the most interesting results of the excursion, and new to Scandinavia. I have given some notes on the genus and species, *ante*, p. 31.

AGAPETUS, sp. ?.—Vossevangen, July 19th, several ♀. I do not feel justified in hazarding a determination in the absence of the ♂.

#### PLANIPENNIA.

SIALIS LUTARIA, L.—Öilo, July 13th, on the border of the lake.

SISYRA FUSCATA, F.—Öilo, July 13th, as above, common.

MICROMUS ANGULATUS, Steph. (*aphidivorus*, Hag., *olim.*).—Hönefos, July 9th, beaten out of alder, one example. Hagen, in his "Hemerobidarum Synopsis synonymica" (Stett. Ent. Zeit., 1866, p. 408) adopted Schrank's name for this insect, in which he was followed by me and others, but I cannot say that I was ever satisfied with the determination. In the Proc. Boston Soc. N. H., xxiii, p. 280 (1886), he says he is "convinced" that Schrank's *aphidivorus* was *not* this species, and falls back on *angulatus*, Steph., as the oldest name. I quite agree in pursuing this course, and shall use "*angulatus*" in future.

HEMEROBIUS MARGINATUS, Steph.—Fjeldheim, July 11th; Eide, July 23rd; females only.

HEMEROBIUS PINI, Steph.—Sörum, July 10th, out of spruce-fir in the forest.

HEMEROBIUS NERVOSUS, F.—Vinje, July 18th, one dark ♀.

CHRYSOPA PERLA, L.—Hönefos, July 9th; Fjeldheim, July 11th; one from each locality.

#### PSEUDO-NEUROPTERA.

##### PSOCIDÆ.

ELIPSOCUS (MESOPSOCUS) UNIPUNCTATUS, Müll.—Lærdalsören, July 16th, one example.

ELIPSOCUS CYANOPS, Rost.—Vossevangen, July 19th, one example.

##### EPIHEMERIDÆ.

Determined by the Rev. A. E. Eaton.

EPIHEMERA VULGATA, L.—One ♀ imago, Fagernes, July 12th. Abundant further up the Strandefjord near Svernæs and Ulnæs.

LEPTOPHLEBIA MARGINATA, L.—One ♂ imago, Öilo, July 13th.

LEPTOPHLEBIA MEYERI, Ehn.—Fagernes, many examples from spiders' webs, July 11th; Öie, very common, July 14th.

*EPHEMERELLA* (sp. n.).—Lærdalsören, July 16th, 1 subimago; the largest species of the genus (wings 12 mm. long) found hitherto in Europe, but which it is not advisable to name in the absence of the imago.

*BAËTIS RHODANI*, Piet.—One ♂ imago, Fagnæs, July 11th.

*BAËTIS PUMILUS*, Burm.—Opheim, July 18th, common.

*CENTROPTILUM LUTEOLUM*, Müll.—Grindeheim, July 14th, common. The specimens had the notum black, fading to dark brown.

*AMELETUS INOPINATUS*, Etn.—Nystuen (3250 ft.), July 15th, 1 ♀ subimago. Slightly open to doubt in the absence of the imago, but practically certain.

*SIPHURUS ÆSTIVALIS*, Etn. (sp. n.), cf. *ante*, p. 30.—Sörum, abundant.

*HEPTAGENIA SULPHUREA*, Müll.—One ♂ imago, Opheim, July 18th.

*HEPTAGENIA CÆRULANS*, Rost. ?.—Fagnæs, July 11th, 1 ♂ subimago; Fjeldheim, same day, 2 ♀ and 2 ♂ imagos by beating trees conspicuous from the riverside. The colouring of the males seems rather darker than in specimens from middle Europe.

The *Ephemerella*, *Ameletus inopinatus*, *Siphurus æstivalis*, and *Heptagenia cærulans* ?, are new to Scandinavia.

Lewisham, London : December, 1902.

## FURTHER NOTES ON SOUTH AFRICAN LEPIDOPTERA.

BY FRANCES BARRETT; EDITED BY C. G. BARRETT, F.E.S.

(Continued from Vol. xxxviii, p. 129).

*Glottula* (*Sesamia*?) *fusca*, Hpsn.—[This is an obscure looking and by no means handsome *Noctua*, an inch and a quarter, to an inch and half, in expanse of wings; the fore-wings somewhat rounded behind, of a lurid reddish-brown; the orbicular and reniform stigmata paler, but edged with black; the first and second lines slender and rippled throughout, black; beyond the second a straight cloudy black shade; and the hind marginal space rippled with black. The hind-wings pale smoky-brown. It has only recently been known to science, but has this year become so abundant in the colony as to very seriously affect an important crop—the maize—locally known as mealies. My sister has been for some considerable time investigating its life-history, in the hope of devising some means of checking its devastations, and I now think that her observations may be useful, taken with those of other observers, towards this important object. My brother writes: "The maize crop will be largely a failure, from the ravages of this grub; all the fields of early mealies are damaged, perhaps two plants out of three becoming unfruitful, but the later mealies may still do something. It is the staple product in these parts (Transkei), and the people are looking anxious." With this exordium I venture to give my sister's notes, as they have reached me from time to time.]

November 20th, 1901.—"I found these moths in the window, at dusk, *inside*, over my rearing-boxes, but could not find that they had escaped from any box. They are like, but not identical with, my moths reared from Natal lily (*Glottula pancratii*), but their hind-wings are not so white. Could they have come from the

mealies? There is a great heap of the latter, still in the cob, lying in the same room. There is also a pale maggotty-looking creature destroying the mealie plants, beginning at the roots and eating upwards. I am trying to rear some. These larvæ are of ordinary shape, smooth and plump."

December 20th.—"I must try to catch the mail with my mealie-moths, and the cobs, which will tell their own tale, empty chrysalis skins, and their burrows. The moths got to the *inside* of the window, night after night, so I examined the heap of dried mealies stored on the floor of the room. Here I found several moths upon the cobs which had no stalks attached; so breaking up a lot, found a living grub and an empty case. I believe that they work their way right up from the root inside the stem, for we found the same sort of larvæ in roots of fresh mealie-plants, underground, this year."

January 30th, 1902.—"Now we have been investigating the damaged mealie *stalks* in the 'lands' (farm-lands). They just wither off, only a few plants escaping. We took a knife, and after pulling up a root, dissected it at our leisure. In one stalk I found seven chrysalides, and a living larva at the top. I found that there was usually a hole in the side of the stem for each chrysalis, so that the moth could at once escape. Some larvæ that we found were large, some small; one or two in, or on, the cobs, eating the grains, but most of them in the stem eating the pith only. When in the cob they seem to eat a few mealie-corns to clear their way, but prefer to burrow into the interior. I noticed that all the holes were now above the roots, often in the first joint above! but earlier in the year we found them in the bottom prongs of the roots."

March 5th.—"It has done shocking damage this year; the maize (mealie) is the food of these people; most of them live upon it and milk."

March 14th.—"There is a new development of the maize-pest! There are evidently two broods this season. The first fed in December, and the moths were out in about three weeks. Now, in the middle of March, there is an amazing number of young larvæ spoiling whole 'lands' of the late crop. These feed at the *top* of the plant, just under the male blossom, so that it often drops off or may be pulled out, rotten as well as worm-eaten. These certainly feed *downwards*, but whether they then enter the young cob I have not yet ascertained. All feed in the pith or on the corns outside the cob, worming a pattern down till they get inside the stem. Thus the young larvæ which I am now finding nestle at the bottom of the chaffy-looking spike of blossom, and eat a tiny hole down into the next joint. The leaves, which are very tough, are never eaten, but the whole plant generally turns yellow and perishes. I think that the nearly full-grown larva enters the stem as near to the base as it can, and eats upward, forming a cavity for pupation, and making a hole from which the moth may emerge. In the later crop most of the damage is done near the top of the plant. If attacked very early the whole plant dies off, if later the mealie ear is stunted and poor. The whole 'land' proclaims the presence of the pest by the unhealthy, faded, tinge of the plants. It must be in the later brood that pupation takes place in the *cob*."

April.—"I hear from a trader living nearer to the coast that they are free from this mealie-pest; he thinks that the creature is found more in the valleys. I have been wondering whether, if in the second brood, the tops of the infected plants

were cut off and carried away in sacks, the mischief might be lessened. Yet it is not easy to burn green stuff in large quantities, and the larvæ are very tenacious of life. They are now gnawing at dry stalks that I have had in boxes and bottles for weeks. E. says, "Give the tops to the horses for green fodder"—which is practical—but think of the labour of gathering the tops in the big weary 'lands,' and how the lazy natives would throw themselves down at the foot of the plants!"

April 28th.—"The other evening I thought I would go over and see how the mealie-pest was getting on. I wanted to see whether there were chrysalides or only empty pupa-skins in the stalks. Instead of either I found living plump larvæ in the withered canes, and not a pupa at all; so it seems that they remain in the larva state much longer in the autumn than in the earlier broods." (It should be remembered that in this southern region our seasons are reversed.) "In examining the plants I noticed that one, of which the top shoot had been cut off just above the fruit, held a mealie-cob, firm and good, with its stalk still green; while those top shoots which had been burrowed by the young larvæ hung over withered and partly rotten, full of gnawings like sawdust. I particularly noticed that all the *small* holes, made by young larvæ, were at the head of the plant, and continued down the inside of the flower-stalk, which is longer than a joint, and, perhaps, through the first joint, which is the most tender; afterwards they must eat their way out, and then in again below; some wandering lower down, so as not to crowd usually more than two or three into a space between two joints; more generally there is only one. So I reverse my observations about its beginning at the base of the plant, because the infant larvæ seem always to be at the top of the cane under the flower-head. When disturbed by cutting open the cane, the larva makes a scramble to hide itself, and I think that the journey externally from joint to joint is always performed at night."

September 25th.—"I have continued to look after the dead mealie-stalks in the 'land' which they are ploughing. I want you to note that there are successive crops. The plant comes up in about ten days or a fortnight after sowing. In many cases it is spoiled before the mealie-cob has time to form, yet we find living larvæ in the stems after all these months! It must be nearly ten months since I told you about those in Mr. Fuller's 'lands.' The plants sown last September and submerged in the flood contained, besides mud, one or two dead larvæ, and a few skins of chrysalides, from which the moths had emerged. A later 'land,' a little higher up, and sown in November, but partially flooded, furnished a lot of empty chrysalis skins and one full-grown larva, the stalks being quite dead, many of them lying flat on the ground. In the late 'land' sown in December, there were empty pupa-skins and living larvæ in the same stalk."

[From the drawings sent the larva appears to be slender and decidedly elongated; pale pinkish-buff, with a shining, semi-transparent appearance, and hardly visible hairs; head round, dark brown or red-brown, dorsal plate large, anal plate less so, both brown; spiracles black on the thoracic segments, where parts of similar dots beneath, with them, form sharp triangles of dots; on the remaining segments the spiracles are more faint, but one or two black dots lie below them, and a few more about the body, while two conspicuous triangles of the same form a sort of necklace round the twelfth segment. The pupa is short and much rounded; red-

brown or dark liver-colour, without cocoon. It seems to be well worthy of consideration whether, as indicated above, the ravages of this insect might not be very greatly checked by cutting off the top joint and tuft of male flower as soon as the ear is set, and thereby removing the infant larvæ. The destruction of the removed portion would be difficult, but surely some method can be found if the safety of the crop depends upon it.]

(To be continued)

*Syrphidæ in North Kent.*—As most of the British *Syrphidæ* can now be easily identified—thanks to Mr. Verrall's book—the following records of some of the less generally distributed species from various localities in North Kent may be of interest to Dipterists:—

*Pipiza luteitarsis*, Ztt.—I have taken several ♂s of this species on lilac leaves in gardens at Eltham towards the end of May. *Platychirus sticticus*, Mg.—One ♂ on 27th May, 1902, in a garden at Eltham, flying together with *P. albinus* and *scutatus*. *Syrphus labiatarum*, Verr.—Three ♀s taken at Greenwich Marshes on 26th July, 1902. In one of these the right hand spot on the 3rd abdominal segment is absent; the segment itself is slightly twisted and the marginal pubescence wanting (this is also the case in three other specimens of *Syrphidæ*, which have one or other of the abdominal spots missing). *S. lasiophthalmus*, Ztt.—I took a ♂ of this species at Eltham on 22nd April, 1901, and found both sexes fairly common at sallow blossom at Bexley on 13th April, 1902. *S. barbifrons*, Fln.—One ♂ at shallows, Sidcup, 19th April, 1902. *Xanthogramma citrofasciatum*, De G.—On 27th May, 1900, I took one ♀ at Lamorbey, near Sidcup. *Volucella inanis*, L.—Two ♂s and 4 ♀s at Chattenden Woods on 3rd and 5th August, 1901. *Eristalis aeneus*, Scop.—On the 11th August, 1901, I took a ♂ of this species on a chalk down near Farningham (I also took several specimens at Southwold, in Suffolk, in the first half of September, 1899). *E. intricarius*, var. *furvus*, Verr.—One ♀ at Eltham, 16th October, 1901. *Helophilus trivittatus*, F.—This species occurred sparingly at New Eltham on a piece of waste ground in July, 1899. *H. vittatus*, Mg.—I took one ♂ at Gravesend Marshes on 12th July, 1902; not recognising the species I did not look for more, but it was certainly not abundant (cf. Verrall's Brit. Flies, vol. viii, p. 550). *Criorrhina berberina*, F.—I have taken this species in woods at Bexley both in 1901 and 1902, in June. *C. floccosa*, Mg.—Odd specimens have occurred at Eltham in 1900, 1901, and 1902, at the end of May and beginning of June. *Xylota lenta*, Mg.—I took a ♂ at Chattenden 29th June, 1901. *Chrysotoxum octomaculatum*, Curt.—I have taken the ♂s—and, I think, the ♀s also—of this species, at Eltham on the 6th August, 1900, and at Bexley on 20th August, 1902. *Microdon devius*, L.—I unexpectedly took a ♀ while collecting *Lepidoptera* at Shoreham (Kent) on 28th June, 1902.—H. W. ANDREWS, 9, Victoria Road, Eltham: January 6th, 1903.

*Theriopectes luridus*, Fln., and other ♂ *Tabanidæ*, at Chattenden.—On the 12th July last I had the good fortune to capture a ♂ of the above-mentioned Dipteron off a tree-trunk at Chattenden. The ♀ of this species is known from



Scotland (Ent. Mo. Mag., Vol. xiii [2nd Series], p. 110), but, as far as I am aware, there is no previous authentic record of the capture of the ♂. I have to thank Mr. Austen for kindly identifying my specimen. On the same day—one of the few really hot days of the past summer—I was surprised to find the ♂s of *Tabanus autumnalis*, L., occurring on the tree-trunks and a piece of fencing as commonly, or more so, than the ♀s. I took 18 ♀s of this species, and also 1 *T. bromius*, L., ♂. On previous visits I had not noticed any ♂ *Tabanidae*, but perhaps the comparatively late hour (between 4 and 5 p.m.) may have accounted for their settling on the tree-trunks, and their inactivity when disturbed.—ID.

*Colcoptera at Innerleithen in Peeblesshire.*—My summer holidays last year were spent at a cottage on the Tweed about 1½ miles above the small town of Innerleithen, and about 5 miles below Peebles. The house, where we lived from August 11th to September 1st, stood on the lower slopes of Lee Pen, a fine hill rising to a height of nearly 1700 feet, and in front between the river and the high road was a narrow belt of pasture fields; the opposite bank of the river rises steeply, and is mostly covered with plantations of pines. Fine roads run along both banks of the river; and as Innerleithen stands at the junction of the Leithen water, with the Tweed opposite to which the Traquair water comes in, there were two fine lateral valleys close at hand, both with well-kept roads; the road up Traquair water gives access over a pass, which rises to over 1000 feet, to the valley of the Yarrow water and the beautiful St. Mary's Loch, so beloved of Hogg, the Ettrick Shepherd. It was, therefore, an ideal spot for cycling; rarely a day passed in which we did not cover some 20 to 30 miles in one direction or another; the whole district is famous in Border romance and song, and is so full of antiquarian interest that entomology had many rivals during our holiday; nevertheless, I did manage, by taking advantage of every opportunity, to find a few good beetles, and as the district has not probably been worked before, they are worth putting on record. By sluicing at sandy spots on the river bank, *Bembidium decorum*, Pz., *B. tibiale*, Duft., and *B. monticola*, Sturm; *Homalota elongatula*, Gr., *H. currax*, Kr., and others, were obtained, and a similar plan on the Yarrow produced a specimen of *Philonthus fulvipes*, F. Out of small burns, tributaries to the river, came *Hydræna pygmaea*, Wat., *H. gracilis*, Germ., *Hydroporus rivalis*, Gyll., and *H. septentrionalis*, Gyll. Crawling on the roads, usually at dusk, I found *Cychrus rostratus*, L., *Carabus nemoralis*, Müll., *Acidota crenata*, F., *Homalota eremita*, Rye, *Staphylinus stercorarius*, Ol., *Barynotus obscurus*, F., *Serica brunnea*, L., and many common things; unfortunately, the nights were too cool to make this, as it often is, a prolific form of collecting; there were several ground frosts during our stay. Under stones, on the higher parts of the hills which line both sides of the valley of the Tweed, *Carabus catenulatus*, Scop., was exceedingly common; *Bradycellus cognatus*, Gyll., and *B. collaris*, Pk. not uncommon; *Calathus micropterus*, Duft., very abundant, while *Amara lunicollis*, Schiöd., *Olisthopus rotundatus*, Pk., and many other commoner *Carabideæ*, were to be found fairly abundantly; the common "staphs" in such situations were *Ocypus brunnipes*, F., *O. cupreus*, Rossi, *Othius melanocephalus*, Gr., &c. Sweeping and beating were of little avail, and, in fact, only two days were in the least fruitful in this respect, the sweep net producing *Phyllotreta flexuosa*, Kuts., *Hyastes cunicularius*, Ratz., *Longitarsus fuscicollis*, Steph., *Antherophagus nigricornis*, F.,

*Brachypterus urticæ*, F., *Anisotoma calcarata*, Er., *Sphæroderma cardui*, Gyll., mostly off ragwort, and off long rank grass in a lateral valley where once there had been a forest, now only marked by a few dead stumps; off dead fir boughs I beat *Salpingus castaneus*, Pz., and *Rhinosimus planirostris*, F. Wherever I found suitable moss it was carefully worked, but not with much success, except in one or two instances, the following being the best insects obtained:—*Euryporus picipes*, Pk., *Quedius auricomus*, Kies. (common in moss at the side of a tiny mountain stream some 1100 feet up), *Stenus Gagneveri*, Duv., scarce in some places; *Chilopora rubicunda*, Er., *Myllena brevicornis*, Mat., *Gymnusa variegata*, Kies., and *Hydroporus nigrita*, F. A single *Taphria nivalis*, Pz., was found under a stone in a turnip field, and a cod's head put out in the garden as a trap produced nothing except such common things as *Creophilus maxillosus*, L., *Hister succicola*, Th., *Silpha rugosa*, L., and *Philonthus æneus*, Rossi, one of these latter with red elytra and legs, and apparently quite mature.—T. HUDSON BEARE, 10, Regent Terrace, Edinburgh: *January 1st, 1903.*

*Zeugophora flavicollis*, Marsh., in *Epping Forest*.—On August 20th last I beat a large ♀ *Zeugophora flavicollis* from aspen near Theydon Bois; I do not think this species has been found before in Epping Forest. Although all the other aspens seen in the neighbourhood were beaten, no further specimens could be had.—STANLEY W. KEMP, 80, Oxford Gardens, W.: *January, 1903.*

*Coleoptera near Dublin*.—During about ten days' collecting in the neighbourhood of Dublin towards the end of October and beginning of November, I had the pleasure of adding three species to the Irish list. They are *Hydroporus longicornis*, Sharp, *Phytosus nigriventris*, Chev., and *Omalium rugulipenne*, Rye. On November 1st, I ascended Mount Kippure in the hope of getting *Agabus arcticus*, Payk. In this I was unsuccessful, but among a number of *Hydropori* captured, of the species *morio*, *pubescens* and *obscurus*, I found a specimen of *longicornis*. The elevation was about 2,200 feet. Dr. Sharp kindly confirmed my identification of this insect. I am also indebted to him for identifying *Omalium rugulipenne*. This species occurs all along the Dublin coast, under seaweed, decaying vegetation, etc. On the sea-shore of the North Bull sandbank, and at Baldoyle and Sutton it may be taken in profusion in company with *Oxytelus maritimus*, Thoms. At Baldoyle I took a single specimen of *Phytosus nigriventris*, in company with *P. balticus*. It is curious that both *O. rugulipenne* and *P. nigriventris* are taken on the Wallesey coast, on the opposite side of the Irish Channel. Other insects of interest captured were *Brychius elevatus*, Panz., of which single specimens were taken in one or two rapid running streams; *Colambus quinquelineatus*, Zett., abundant in a few old quarry-pit ponds; *Hydroporus rivalis*, Gyll., *septentrionalis*, Gyll., and *Davisii*, Curt.; one specimen of *Henicocerus exsculptus*, Germ., and a series of *Octhebius auriculatus*, Rey. This last species was fairly common in the Portmarnock salt-marsh, where I also took a single specimen of *Mecinus collaris*, Germ.—Id.

*Aseum striatum* and other *Coleoptera* in the *New Forest*.—I spent the first week of last June collecting in the neighbourhood of Brockenhurst. For some time previous the weather had been cold and stormy, and the effects of the frost and

hail were apparent everywhere; in many places all the young foliage had been destroyed, leaving the trees almost as bare as in winter. I gave my attention chiefly to the *Coleoptera*, and obtained a fair number, in spite of these unfavorable circumstances. The season being so very backward, most of the rarer Forest species were only just beginning to appear. Solitary specimens of *Grammoptera analis*, *G. præusta*, *Elater lythropterus*, *E. elongatulus*, *Callidium alni*, *Haplonemus impressus*, and *Asemum striatum* were taken. This last was by far the most interesting beetle met with, as it has previously been known as a British insect from Scotch records only. Unless recently introduced, it is strange that so large and conspicuous a species should have been overlooked.\* *Calosoma inquisitor* was not uncommon on tree trunks, and *Phytodecta viminalis* swarmed on willows. Other species taken included *Carabus arvensis*, *Pterostichus dimidiatus*, *Scaphidium quadrimaculatum*, *Silpha quadripunctata*, *Malachius æneus*, *Attelabus curculionoides*, *Balaninus venosus*, *B. villosus*, *Clytus mysticus*, *Rhagium inquisitor*, *R. bifasciatum*, *Liopus nebulosus*, *Callidium violaceum* and *Ischnomera cœrulea*. *Athous vittatus* was very common everywhere. I also took a few *Lina populi* from a dwarf species of willow. They all had the elytra of a much brighter red than the Norfolk and Cambridgeshire specimens I have met with.—H. J. THOULESS, Corfe, College Road, Norwich: December 15th, 1902.

*Sitaris muralis*, Forst., at Chobham.—I have recently captured three specimens of this species on a projecting piece of the wall of a red-brick, seventeenth-century house at West End, Chobham, Surrey; one on August 19th, one on August 20th, and one on August 25th. All three were taken at almost exactly the same spot, near a small hole, which I suppose must have been the entrance to a nest of *Anthophora*, but no bees were visible, though I often watched the hole. They were very sluggish, and scarcely moved when handled, apparently having just emerged from the pupa. *Sitaris* is not recorded from Surrey in Fowler's "*Coleoptera of the British Islands*;" nor is it included in Mr. Champion's List of the *Coleoptera* of the County.—DONALD S. ROBERTSON, 9, Elsworth Terrace, London, N.W.: January 6th, 1903.

Occurrence of *Anthicus* (*Aulacoderus*) *sulcithorax*, Desbr., in Malta.—I have been for some time puzzled with this striking little *Anthicus*, which I found not uncommonly by sweeping last June in Malta. I have now no doubt, however, that it is the above-mentioned species, which is recorded from Algeria, Palestine, &c. *Anthrenus biscrensis*, Reitt., is also common on the *Umbelliferae* in the same locality, and it is not unlikely that more Algerian forms will be discovered as the island is more thoroughly worked.—M. CAMERON, H.M.S. "Harrier": November 19th, 1902.

*Aporia cratægi* in Dorsetshire.—In Mr. C. W. Dale's "Historical Notes on *Aporia cratægi* in Britain" (*Ent. Mo. Mag.*, vol. xiii, 2nd series, p. 157—8) the only record of the occurrence of the butterfly in Dorsetshire is "Glanvilles Wootton, sparingly, last taken by J. C. Dale on June 10th, 1815." I wish to supplement this record with my own experience. When quite a little boy I lived at Weymouth, and

\* *A. striatum* has already been recorded from the New Forest [*Ent. Mo. Mag.*, xxx p. 227 (1894)], as well as from Bookham, Surrey [*op. cit.*, xxxiii, p. 105 (1897)].—G. C. C.

began my butterfly collecting there in the year 1863. In either that year or 1864 I met with the "Black Veined White," as I then knew it, in such numbers as to make me regard it as quite a common insect, so much so that I did not trouble about taking many examples, being, childlike, more attracted by such brilliant creatures as *Vanessa Atalanta*. I have a clear recollection of seeing the webs of the larvæ on the hawthorn hedges, with their swarming inhabitants. This was in the direction of Radipole, that being the locality in which I did most of my collecting. Unfortunately, the few specimens I did take were destroyed in an accident which befell my infant collection. I left Weymouth in 1865, and never returned, so I have no means of judging whether the butterfly persisted, or whether what I observed was merely a casual invasion of the locality.—W. F. JOHNSON, Acton Glebe, Poyntzpass: December 26th, 1902.

*Psocus quadrimaculatus*, Latr., near Saltash.—Mr. McLachlan very kindly named this insect for me, and suggested it was worth recording, as it is always local, and had not been heard of for some time. I now do so with much pleasure. It was dislodged on July 1st, 1896, from a bush and fell into the beating tray, when beating for larvæ at Millhook, Cornwall.—G. C. BIGNELL, Saltash: December 15th, 1902.

*A change of generic name: Nephopteryx altered to Nephelopteryx.*—I learn that the name *Nephopteryx*, which I have given to a new genus of *Plecoptera* (cf. Klapálek, Fr., Zur Kenntnis der Neuropteroiden von Ungarn, Bosnien und Herzegovina, in Természetráji Füzet., xxv [1902], p. 179), has been long pre-occupied by Zeller in *Micro-Lepidoptera*. I change, therefore, the name to *NEPHELOPTERYX*. It is a part of the old *Teniopteryx*, Piet., which has been divided into *Teniopteryx*, s. str., *Rhabdiopteryx*, Klp., *Gmopteryx*, Klp., and *Nephelopteryx*, Klp., represented by typical species. *T. trifasciata*, Piet., *Rh. hamulata*, Klp., *E. Læwii*, Alb., and *N. nebulosa*, L.—FR. KLAPÁLEK, Karlin, Bohemia: January 6th, 1903.

## Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: November 17th, 1902.—Mr. G. T. BETHUNE-BAKER, F.L.S., President, in the Chair.

Mr. R. C. Bradley showed a series of the bee *Panurgus ursinus*, Gmel., taken at Barmouth this summer. Also specimens of the Syrphids *Catabomba pyrastris*, L., and *selenitica*, Mg., one each from Barmouth, in which the usual coloration of the pale markings on the abdomen was reversed, those of *pyrastris* being yellow and those of *selenitica* white; also var. *unicolor* of *pyrastris* from Moseley. Mr. Wainwright suggested that perhaps the colors of the spots had been affected in the killing by sulphur, &c.; but Mr. Bradley thought not. Mr. A. H. Martineau showed various insects:—*Vanessa polychloros*, L., from Budleigh Salterton, S. Devon, and *Melanargia Galathea*, L., from Sidmouth; also the Fossor, *Cerceris arenaria*, L., from Budleigh, together with its weevil prey, which it was carrying when captured; and the Dipteron, *Tabanus autumnalis*, L., which was taken in the house at Budleigh. Mr. Wainwright said he had several times seen large *Tabani* indoors. Mr. A. D. Imms, dragon-flies:—*Erythromma najas*, Hans., from Yardley Wood, which he said appeared to be a species with restricted distribution, but had already been made



known by Mr. Bradley as occurring locally at Sutton Park; also *Sympetrum striolatum*, Charp., taken in his own garden at Moseley. Mr. G. T. Bethune-Baker, a long series of *Ematurga atomaria*, L., from the hills above Corwen, N. Wales, and pointed out the great amount of variation which obtained in the shape of the wings, the colors, and the markings. Some of the females closely approximated in appearance to the males. It was remarked that all alike were unusually pale in comparison with the usual Midland forms of the species, and especially so in comparison with the Cannock Chase specimens; and he said that many of the paler ones looked white on the wing.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *December 8th*, 1902.—Mr. WILLIAM WEBSTER, of St. Helens, in the Chair.

Messrs. J. F. Dutton (Helsby) and J. R. Le B. Tomlin (Chester) were elected Members of the Society.

The Secretary announced donations to the Library from the following Authors:—Fourteen works from Mr. Malcolm Burr, B.A., F.Z.S., F.E.S.; four from Mr. F. Bouskell, F.E.S., F.R.H.S., and one from Mr. W. E. Sharp, F.E.S. Mr. Burr's handsome donation further included volumes by Pastel (2) and de Bormans (1). Mr. Alfred J. Jolley (Warrington) read an instructive paper on "Larval Forms, a study for the doctrine of descent," in which he portrayed the magnitude of the difficulties with which the student had to contend, and the need for caution in dealing with questions of evolution in those animals that passed through complete metamorphosis, since in many cases the life-history of the individual cannot be accepted as representing the life-history of the race. A hearty vote of thanks having been accorded the lecturer for his interesting and exhaustive discourse, Mr. F. N. Pierce (Liverpool) contributed a communication "On the specific differences between *Lithosia sericea*, *L. complana* and *L. complanula*," in which he recorded the results of his investigation on the genitalia of the *Lithosidæ*. Unfortunately, the results of his research as regards the first two were of a negative character, inasmuch as the genitalia were identical in both species, but as *L. pygmaöla* was also similar to these, and no one doubted the claim of the latter to specific rank, he was of opinion that as the differences in colour, habitat, larvæ, &c., were so constant, until the one had been bred from eggs laid by the other, *L. sericea* and *L. complana* must stand as distinct species. The notes were illustrated by the author's preparations thrown on the screen by the Micro-lantern, drawings of the genitalia, and the insects themselves. Mr. Collins (Warrington) in discussing the paper, confirmed Mr. Pierce's conjecture as to moisture being responsible for the production of melanism in the *Lithosidæ*. The following exhibits were examined:—A fine collection of Transvaal *Lepidoptera*, ranging from the *Sphinges* to the *Deltoides*, by Captain B. Fairclough. *Lithosidæ* by Mr. F. N. Pierce; British *Longicornes*, including *Strangalia aurulenta*, *Saperda scalaris*, and *Leptura scutellata*, by Messrs. J. R. Le B. Tomlin and J. B. Dutton; some remarkably light varieties of *Abrazas grossulariata*, and a var. of *Thera firmata* from Delamere, by Mr. J. Womersley; Gall-making insects and specimens of their work by Mr. J. Deane; melanic forms of *Triphæna orbona* from Lewis, Elgin, &c., one specimen with dark hind-wings, lacking the marginal band, being exceptionally interesting, by Mr. B. H. Crabtree (Manchester); *Caradrina ambigua*, *Aporophyla nigra*, &c., by Mr. R. Tait,



jun. (Manchester); *Vanessa urtica*, varieties by Mr. J. Wright (Warrington); Insects found in timber by Mr. W. Mountford; *Lepidoptera*, varieties by Mr. B. Prince; British *Bembidiidae*, by Mr. R. Wilding (Bootle); and beautiful specimens of *Dasyampa rubiginea*, *Plusia moneta*, &c., by Mr. J. Collins (Warrington).—E. J. BURGESS SOPP, Hon. Secretary.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, November 27th, 1902.—Mr. F. NOAD CLARK, President, in the Chair.

Mr. E. J. Hare, East Dulwich Grove, S.E. was elected a Member.

The Meeting was devoted to a Special Exhibition of notable captures and varieties, and was, as usual, a very successful gathering. Between eighty and ninety Members and their friends attended, and a large number of exhibits were made. Messrs. Harrison and Main exhibited very varied series of several species of *Lepidoptera* recently taken in the Shetland Isles, including *Eupithecia nanata*, *Dianthæcia nana (consersa)* smoky and dark forms, *Noctua festiva* v. *confusa*, and *Anarta melanopa*, with normal types for comparison. Mr. Cant, a pair of the extremely dark form of *Memerophila abaptaria*, taken this year in Regent's Park. Mr. Kaye, long series of *Anchocelis lunosa*, with the forms *obsoleta*, *humilis*, *brunnea*, *neuroides* and *agrotoides*, see "Brit. Noet.," II, 168-170. He had not met with v. *rufa*, which was said to be common. Mr. R. Adkin, examples and series of hybrid *Lepidoptera*, and read notes on their life history (1) *Smerinthus ocellata* ♂ × *Amorpha populi* ♀; (2) *Selenia bilunaria (illunaria)* ♂ × *Selenia tetralunaria (illustraria)* ♀; (3) *Pygæa pigra (reclusa)* ♂ × *P. curtula*, ♀, and (4) *P. curtula* ♂ × *P. pigra* ♀. In the last two series the ♀ influence was dominant; in the two former cases, the characters of ♂ and ♀ were pretty evenly shared or deleted. Mr. Carpenter, specimens of *Apatura Iris*, bred from larvæ he had hibernated, and on behalf of Mr. Oldaker (1) *Polyommatus Icarus*, a gynandromorph, left side ♂, right side ♀, taken June 14th, 1902; (2) a ♂, with under-side having faint marginal spots, and only one spot on central area of ashy grey, taken June 7th. Both were from Rammore Common; (3) a ♂ about the size of an average *Cupido minima*; and (4) a var. of *Eucanessa Antiopa*, bred from German larvæ, with no blue spots on upper wings, and only one blue spot on the lower wings. Mr. Seollick, an *Aglais urticae*, with ground colour resembling that of *Eugonia poly-chloros* and a *Plusia chrysitis*, with the usually burnished appearance greatly curtailed on one side. Mr. Hare, a *Strenia clathrata*, with nearly the whole of the lighter markings of the type obliterated, taken at Marlborough, and an *Ephippiphora obscurum (gallicolana)* with the dorsal blotch suffused with fuscous. Mr. J. A. Clark, an almost white var. of *Agrotis suffusa*, taken in September in S. Devon, and two hybrid *S. ocellata* ♂ × *A. populi*, ♀. Mr. Lucas, several examples of the Dragonfly, *Oxygaster Curtisii*, from Hauts, with nymph skins from France, and several specimens of the earwig, *Labidura riparia*, from Bournemouth. On behalf of Mr. Ansorge, a series of *Agriopsis aprilina*, bred from the New Forest, and having very dark lower wings. Mr. G. T. Porritt, the Huddersfield range of forms of *Polia chi*, from almost white to dark slate, including the forms *olivacea* and *suffusa*. Mr. Joy, aberrations of *Epinephele hyperanthus*, from Folkestone, mainly showing a tendency to diminution of the eye-spots. Mr. Main, on behalf of Mr. Mera, a series of very dark *Odontopera bidentata*, bred from Leeds, and a brilliant green

example of *Mimas (Smerinthus) tilia*, bred in the London district. Mr. Turner, three forms of *Melanippe montanata*, taken at Amersham, Bucks, in June (1) all the marking obsolete or very faint, except a costal blotch; (2) asymmetrical, with the lower half of central band on left fore-wing very narrow; (3) a light form, showing a darker marginal shade to all wings. Mr. Russell, a *Pyrameis cardui*, having apex of fore-wings much shortened with marking much compressed, but in perfect symmetry, taken at Margate. Mr. Hammi, a photograph of *Papilio Machaon* bred from Wicken, with asymmetrical wings and markings; hind-wings were elongated and antennae shorter; a large amount of irregular black suffusion was present on all four wings. Mr. Edwards, a case exhibiting some of the extreme forms of *Satyridae* [as shown in the genera *Helæra*, *Citheronia*, *Pierella* and *Antirrhæa*. Mr. Henderson, series of *Citria fulvago (cerago)* and *Eupithecia tenuiata*, bred from sallow catkins in Surrey, and a well-marked series of *E. rectangulata* from Berkshire. Mr. Rayward, pupæ of *Papilio Machaon*, showing assimilation in colour to their surroundings. Mr. Step, an album of photographs taken mainly at the Society's Field Meetings, chiefly botanical. Dr. Chapman (1) forms of *Cænonympha Pamphilus* from France, Italy, Switzerland, Norway and Spain, illustrating the variation in marginal colouring, development of ocelli, ground colour, and general markings, with the extreme form *lyllus*; (2) *Polyommatus Corydon*, Swiss forms, *corydonius* from Spain, and two forms of *hispana* from Spain; (3) *Erebia Stygne* v. *bejarensis*, large and more richly coloured; (4) *Plebeius Argus* v. *bejarensis*, much larger and more brilliantly marked and coloured, suggesting that *Argus (Egon)*, *Zephyrus* and *lycidus* are local forms of one species. Mr. Yonge (1) *Strenia clathrata*, black var. from Andover; (2) *Phyllocnistis suffusella*, a fine bred series from Reigate; (3) *Lithocolletis quercifoliella*, bred from oak and beech; (4) *L. Clerckella*, dark, and some nearly black, with suffused markings, bred from cocoons found on cherry by Dr. Chapman. Mr. Harrison, on behalf of Mr. C. P. Pickett, a large number of aberrations of British *Lycenidae*, *Mimas tilia* and *Angerona prunaria*.—H. J. TURNER, Hon. Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON: November 19th, 1902.—The Rev. Canon FOWLER, M.A., D.Sc., F.L.S., President, in the Chair.

Mr. E. M. Cheeseman, of 63, Railway Street, Durban, Natal, was elected a Fellow of the Society.

Dr. Sharp, F.R.S., exhibited the egg-cases made by a beetle of the genus *Aspidomorpha (A. puncticosta)*, and stated that they had been sent to him by Mr. F. Muir, of Durban, Natal, where the beetle and the egg-cases are common. He said that Mr. Muir had observed the manner in which the case is formed, and hoped shortly to present a paper to the Society describing this, and the anatomical structures involved. Mr. Norman H. Joy, a well-marked aberration of a female *Lycæna Icarus* striped black on the under-side in the place of the usual ocellations; an androgynous specimen of the same species; an aberration of a male *Lycæna bellarys*, similarly striped on the under-side; a specimen of *Everes argiades*, taken in 1885 near Bournemouth; and specimens of *Apatura Iris* from the neighbourhood of Reading, captured in 1901. He said that with Mr. Lee he took altogether fourteen specimens, all males, eleven of them from the top three branches on the north side of a beech tree, which appeared to be the throne of the ruling

"Emperor" of the wood. Whenever another *Iris* came by, the one on the "throne" attacked it, and after a fight in which one would eventually pursue the other out of sight, the conqueror would return to the perch. If this was captured, the next *Iris* coming along would take possession of the throne, and so on. Mr. Claude Morley, the specimen of *Diastictus vulneratus*, Sturm, first recorded in Great Britain in the November number of the Ent. Mo. Mag., and a rare blue form of *Phratora vitellina*, taken on low herbs, from Tuddenham Fen, Suffolk. Mr. G. C. Champion, specimens of *Nanophyes Durieui*, a beetle from Central Spain, with drawings of the larva, pupa and perfect insect. Professor E. B. Poulton, F.R.S., stated that Mr. A. H. Church, M.A., of Jesus College, Oxford, had observed the larvæ of a species of *Cucullia* (probably *C. verbasci*), feeding upon *Buddleia globosa* which was growing against a wall in the Oxford Botanical Gardens. Mr. Church had sent shoots of the same plant to a friend at Warwick, and these, when grown in a similar position in his garden, were all attacked by the same species during the past summer (1902). It is possible that the eggs are laid upon the *Buddleia* because of the very rough general resemblance in certain respects between its leaves and those of *Verbascum*, in the same manner, as Professor Poulton suggested in 1887, the common food-plants of *Smerinthus ocellata*, viz., apple and willow, may be explained by the parent moth having mistaken the one for the other (Trans. Ent. Soc. Lond., 1887, p. 314). In section II of the memoir cited it is shown that many young larvæ, on emergence from the egg, are able to feed upon strange species of plants, which, later they would refuse, if they had become specialized to one of the recognised food-plants. Mr. R. McLachlan, F.R.S., mentioned the case of *Mamestra persicaria*, a pest in his garden at Lewisham, which, as a rule, attacked first and most *Anemone japonica*. He had this year offered them fern and elder (which is reputed a favourite food), but the larvæ found on *Anemone* refused to touch either of the plants. Mr. Goss said that larvæ of *Chærocampa Elpenor*, taken from a naturalized American balsam near Weybridge, had afterwards refused their usual food-plant, *Epilobium hirsutum*. Professor Poulton expressed his opinion that unusual food-plants must commonly be begun from the egg, and as a further example quoted the case of *Phalera bucephala*, which, found half grown on hazel, refused to touch elm and *Salix triandra*, there being with this as with other species evidently some sort of gastric association between the larva and its food-plant. He also read a communication from Mr. G. F. Leigh, of Durban, Natal, relative to insect enemies there. The writer referred to the ordinary and very common grey South African rat as one of the most dreadful pests to breeders of butterflies and moths. They seem to be particularly fond of almost any pupæ; thick wooden boxes containing them had been eaten right through, and the contents devoured. They were especially fond of *Chærocampa Eson* and *C. nerii*. Even more remarkable was the way in which they captured moths on the wing whilst feeding. A rat would leap from the roof right on to the plant, and more often than not the moth selected for attack was captured, usually followed by a fight amongst the rats over the prize. The moths seen to be caught in this way were *Sphinx convolvuli*, *Nephele variegata*, *Chærocampa Eson*, and *C. celerio*. The first-named is the most successful in escaping, owing to the long proboscis which compels it to hover at some distance from the blossom. *N. variegata* is probably the swiftest flier, but is more conspicuous owing to its dark colour.—H. ROWLAND-BROWN, Hon. Sec.

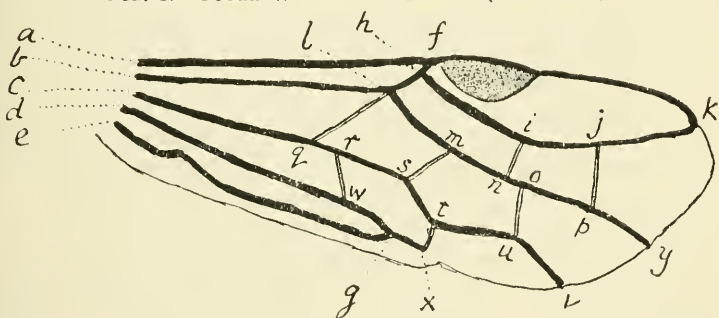
# HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH *TENTHREDINIDÆ*, &c. (2).

BY THE REV. F. D. MORICE, M.A., F.E.S.

The neurulation of a Saw-fly's wing looks so complicated till it is understood, that I think I had better begin by showing it *reduced to its simplest type, i. e.*, with such nervures only as belong not to particular Genera but practically to all Families.

I take then, to start with, a rather simple front-wing—that of an *Emphytus*; omit certain nervures which are not universally found in the Saw-flies; distinguish *longitudinally* from *transversely* running nervures by using thick single lines for the former and thinner double ones for the latter; and thus produce the following Figure.

FIG. 3.—UPPER WING OF A SAW-FLY (SIMPLIFIED).



Nervures in the above Fig. (Konow's nomenclature).\*

Longitudinal "Adern" (= "veins," *venæ*).

*a f k* costa; *b f* subcosta; *c t v* medius; *d x* brachius; *e g* humerus;  
*h i k* radius; *l o y* cubitus.

Transverse "Nerven" (= "nerves," *nervi*).

*i n, j p* cubital nerves; *l q* discoidal nerve; *m s, o u* medial nerves;  
*r w* areal nerve; *t x* anal nerve.

I am afraid that even this simplified figure will to a novice seem rather appalling; but really it is not difficult to understand with a little explanation.

The first thing to be done is to realize the course of the *longitudinal* nervures = the "veins"—the thick single lines. It will be seen that they are much longer than the *transverse* = the "nerves."

\* The synonymy of these nervures in different authors is excessively confusing (*e.g.*, the *cubitus* of Hartig is the subcosta of Thomson and Konow, while the *cubitus* of Thomson is Konow's medius). To discuss the matter at length is outside the purpose of this paper; and I shall simply adopt Konow's nomenclature *en bloc*. Certain changes, I must own, would to my mind simplify and so far improve it; but that is a matter of opinion, and I believe I do better to accept the names as I find them, and only to enter into the nomenclature question just so far as is necessary to make Konow's system intelligible to readers who have studied these insects only with the works of English authors to guide them.



They are also more uniform throughout the whole Group, and much less liable to vary abnormally in individual specimens. We commence with them, partly on this account, and partly because they divide the wing into *areas* named from them, and from these areas again are named most of the (transverse) "nerves" and the "cells" or divisions of the areas bounded by them.

Starting from near each other, and near the base of the wing, five main "veins" run, all more or less in the direction of its apex, but *radiating apart*, like the fingers of an extended hand.

The first pair start at *a* and *b*; these are the *costa* and the *subcosta*. The *costa* follows the actual margin of the wing, and the *subcosta* runs nearly parallel to it for *about half the length of the wing*, when it bends upwards and unites with the *costa* at *f*, just before the stigma (the shaded area in Fig. 3).

From *d* and *e* start another pair, the *brachius* and the *humerus*. These run both somewhat parallel to the lower margin of the wing, but neither of them coinciding with it; again, for *about half the total length of the wing*. Then the *humerus* turns upward and joins the *brachius* at *g* (just as, at *f*, the *subcosta* joins the *costa*). The *brachius* is continued a little further, to *x*, and there disappears.

The fifth of these "veins," starting at *c*, is called the *medius*. It runs at first straight along the middle of the wing (equidistant therefore between the two pairs described above) for half its length. Then it bends downwards as though to join the *brachius*, but at *t*\* turns suddenly off, resuming its horizontal course, then (at *u*) is again deflected, and reaches the margin at *v*.

Besides the above *five main* veins, we have two which may be called *subsidiary*—they are confined to the superior (apical) quarter of the wing, and have the appearance of *branching out of the subcosta*. One leaves it just before its junction with the *costa* (at a point about *h*) and, bending first down and then a little up, finally joins the *costa* (on the margin of the wing) at its apex *k*. This is the *radius*. The other—called the *cubitus*—leaving the *subcosta* earlier (*i. e.*, nearer its base) at *l* bisects, roughly, the area between the *radius* and the apical portion of the *medius*, and so proceeds not always in so straight a line as the Figure shows to the point *y* on the margin.

Thus we have in all five main and two subsidiary longitudinal nervures or "veins," and these divide the wing into longitudinal areas or "fields" as follows.

Between the *costa* and the *subcosta* is contained the *intercostal field*. Between the *brachius* and the *humerus* is the *humeral field*, familiar to all students of Sawflies under the name of the "lanceolate cell." Then between the *subcosta* and the *medius* lies the *medial field*, and between the *medius* and the *brachius* the *brachial field*. (A certain similarity in form and size will probably have been noticed by the reader between the *intercostal* and *humeral* fields and the *medial* and *brachial* fields respectively. This will help him perhaps in forming a mental picture of the neururation as a whole).

Next we have the *radial* area lying above the *radius*, and the *cubital* area below the *radius* and above the *cubitus*. Between the *cubitus* and the apical half of the

\* *t x* is not part of the *medius*, but is one of the *transverse* nervures.



medius comes a continuation of the medial area which, if regarded as distinct from it, may be called the *discoidal field*. That part of the wing lying below and as it were outside of the neururation system, *i. e.*, that which is bounded *inferiorly* by the actual inferior margin of the wing, and *superiorly* by the humerus as to its basal half), and by the medius (as to its apical portion), is called the *anal field*.

Owing to the disappearance of the *brachius* without reaching the margin, there is *no complete longitudinal line of division* between the brachial and anal areas. But for practical purposes the *transverse nerve t x* may be regarded as separating them.

We come now to the transverse elements of the neururation—Konow's "Nerven," *sensu restricto*.

Often (though not in my figure) the radial area is crossed by one—very rarely by more than one. Then the radial area is said to be "divided," or, as some authors express it, "there are two radial cells."\* Similarly the cubital area shows, practically without exception, either as here *two*, or perhaps more often *three*, nerves connecting the radius with the cubitus (*i n, j p*). These, as crossing the cubital field, are called the *cubital nerves* (1st, 2nd, &c.), and the divisions into which they cut up that field are the *cubital cells*. (*Three* seems to have been the original number of the cubital nerves. Where only *two* appear, either the first or second of the original three has vanished—thus, in *Emphytus* the *first* has gone, leaving only the second and third; whereas in *Dolerus* the two surviving nerves are the first and third, the *second* being absent).

Although these radial and cubital transverse nervures give, both as to their number and direction, obvious and easy characters for distinguishing both genera and species, they are unluckily liable, as mentioned in my last paper, to considerable variation—disappearance, duplication, displacement (within certain limits), irregular (atavistic) re-appearance, &c., in particular specimens, or even in one wing of a specimen and not in the other; so that it is very unsafe to trust wholly or even chiefly to them in "determinations."

Very much more constant and trustworthy are the characters to be drawn from the three nervures which cross the median field, *viz.*, *l q* (perhaps the most important nerve in the whole wing) the *discoidal†* nerve, *m s* and *o u* the *medial* nerves (1st and 2nd)—the two latter being better known probably to English readers as the 1st and 2nd "recurrent," and the former as the "basal." The characters of these nerves can hardly ever mislead us, and are of the utmost consequence in determining not merely Genera or Species, but Families and Tribes—such characters, *e. g.*, as whether the discoidal nerve strikes the subcosta *close to* the origin of the cubitus (as in Fig. 3), or considerably *before* it (*i. e.*, between the points *b* and *l* in that Figure), or whether it strikes (*e. g.*, in *Lyda*, &c.) not the subcosta at all, but the cubitus: and again whether the discoidal and 1st medial nerves are *convergent* (upwards) or *subparallel*, whether the two medial nerves are received in the *same* cubital cell or in *two different* ones, &c. The importance of these points for "determination" will appear abundantly when we come to construct our future Tables.

Two more transverse nerves only appear in my figure, *viz.*, *r w*, the *areal* nerve

\* Konow has abandoned this latter expression in his most recent works.

† So called as crossing the "disc" or central part of the wing.

(called by Thomson rather oddly *nercus transversus ordinarius*, and by Mr. Cameron, *e. g.*, see his Tables of Species for *Emphytus*, the *transverse median*) and *t x* the *anal* nerve. Of these the former is the more important, its direction and the point at which it is received in the cell above it giving several useful characters.

We have now, I believe, dealt with all the nervures which are regularly present in the upper-wing of a Saw-fly. But certain others which *appear only in particular Genera or Families* are for that very reason especially useful for "determinations."

Thus—between the costa and subcosta may lie a 6th longitudinal nervure, and this may ultimately either run simply into the subcosta somewhere near *l*, or be forked at its apex into two branches, one joining the subcosta, and the other the costa. Or, in the same region (the intercostal field), there may be a transverse nerve stretching from the subcosta to the costa, either *before* or *after* the point where the former receives the discoidal nerve. Or, as in *Arge*, the costa, instead of lying wholly on the margin of the wing, may quit it just before its apex and bend down to meet the radius, thus cutting off from the rest of the radial area a little subtriangular apical cell (*cellula radialis appendiculata*). Lastly, in the *humeral area* ("lanceolate cell") we have a number of important characters for determining Genera depending partly on the presence or absence of transverse nerves in that field, and partly on certain modifications in the structure of the *humerus* itself, especially in its basal part. These characters we have now to examine.

It will be seen by reference to Fig. 3 that the *humerus* (quite near its base) shows a strong inclination to unite with the *brachius*, long before it ultimately does so at *g*. Generally this inclination is, if we may say so, suddenly checked—the *humerus*, though approaching very near the *brachius*, starts off at a tangent and gradually recedes to a respectful distance from it, before taking the final curve by which it ultimately reaches it. Sometimes, however, the inclination is *not* checked; the *humerus* continues its approach to the *brachius* till it actually reaches it, and so the two veins for a while coincide—it may be only for a moment or for a considerable distance—but always separate again, so as to enclose a spindle-shaped space between them before their final point of union. Again, sometimes the *humerus* without quite reaching the *brachius* at the (sub-basal) point alluded to above, all but does so, and throws a "short perpendicular" nerve across the narrow interval which separates it from its companion vein. Yet again the *humerus*, soon after its origin, seems to vanish and presently to re-appear emerging from the *brachius*, though it has never been seen to join the latter! Lastly, sometimes—though never, I believe, in conjunction with any of the phenomena described above—an "oblique cross nervure" runs over (the apical portion of) the humeral area, cutting it into two divisions, the apical one "completely enclosed," and very much smaller than the other.

Hence arise six distinct forms of "humeral cell," extremely useful for generic determinations, which may be enumerated as follows:—

(1) Fig. 4, *a*. The *humerus*, though approaching the *brachius* near its base, keeps quite apart from it till they meet at *g*. This, the simplest but by no means the commonest form of *humeral area*, has been called "*Cellula lanceolata aperta*" (Thomson).

Example : *Selandria*.

(2) Fig. 4, *b*. The humerus runs as in the last case, but is joined to the brachius before their final meeting-point by an "oblique cross nerve" in the apical portion of the area.

Examples: *Dolerus*, *Emphytus*, *Athalia*.

(3) Fig. 4, *c*. The humerus from its nearest basal point of approach to the brachius throws out towards the latter a "short perpendicular nerve" which reaches it.

Example: *Tenthredo*.

(4) Fig. 4, *d*. The humerus actually touches the brachius, but almost immediately quits it again and runs round separately to *g*, where it rejoins it. "*Cellula breviter constricta*." "Shortly contracted."

Example: *Macrophya 12-punctata*.

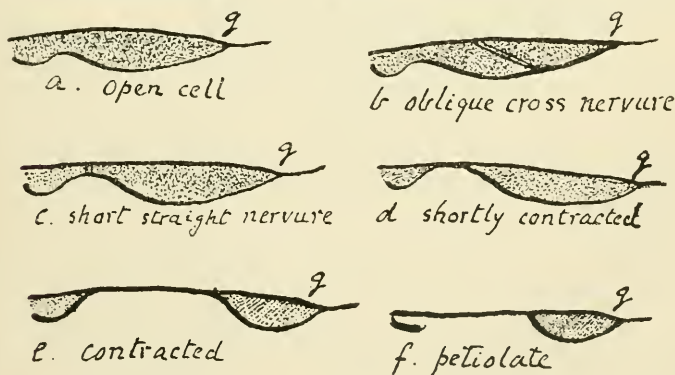
(5) Fig. 4, *e*. The humerus not merely touches the brachius but coalesces with it for a while, then as usual leaves it and at *g* finally rejoins it. "*Cellula constricta*." "Contracted cell."

Examples: *Cladius*, *Hoplocampa*.

(6) Fig. 4, *f*. The humerus vanishes near its origin, then presently re-appears emerging from the brachius (as in the last case) and running round as usual at *g*. "*Cellula petiolata*." "Petiolate, i. e., stalked cell." (The stalk being the basal part of the brachius).

Examples: *Nematus*, *Blennocampa*. In *Kaliosysphinga* this is really the condition; but the humerus, before disappearing, so nearly reaches the brachius that the cell looks as if it were "contracted."

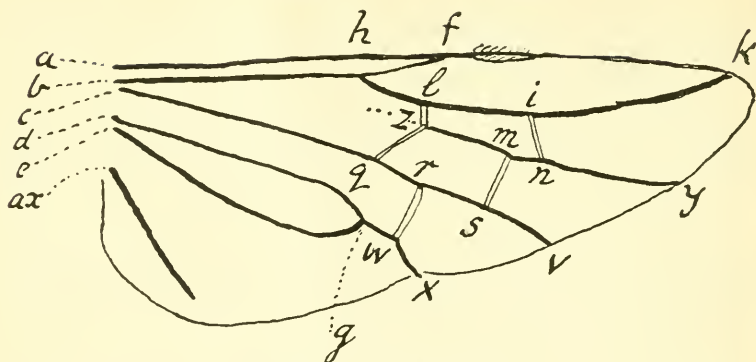
FIG. 4.—DIFFERENT FORMS OF HUMERAL AREA, or "*Cellula lanceolata*."



We may now discuss more briefly the neururation of the lower wing, which is so closely analogous to that of the upper, that any one who has taken the trouble to follow me so far, should have little difficulty in understanding it.

I figure this time an actual wing, and one in which the neururation is pretty complete—that of a *Cræsus*.

FIG. 5.—HIND-WING OF A CRESUS.



Nervures in above Figure.

*a f*, costa; *b f*, subcosta; *c v*, medius; *d x*, brachius; *e g*, humerus; *ax*, axillus; *h i k*, radius; *z n y*, cubitus; *l z q*, discoidal; *i n*, cubital; *m s*, medial; *r w*, areal.

Longitudinal and transverse nervures distinguished as in Fig. 4.

The most conspicuous difference between the upper and lower wings is the great development in the latter of the anal field (the portion lying between the humerus and the inferior margin of the wing). This is extremely broad, and contains a special nerve of its own called by Konow the *axillus* (*ax*). It is not always easy to examine this part of the wing, as it is apt to get creased upwards and folded almost like the wing of a "Diplopteron" (Wasp).

The main longitudinal nervures are the same, only the brachius generally reaches the margin, so that the brachial area reaches right across the wing, and is longitudinally separated from the anal.

The transverse nerves are similarly arranged but reduced in number, and the discoidal nerve is shifted further towards the apex of the wing. It strikes not the subcosta, but the cubitus at its commencement, which is in this wing not a point in the subcosta, but one pretty distant from it (*z*). There is indeed a faint shadowy vestige of the original basal part of the cubitus between *z* and the subcosta; but practically this vein, in the lower wing, commences where it is met by the discoidal nerve, viz., at *z*.

Having thus cut off the basal end of the cubitus, and as it were disconnected it, the discoidal nerve runs on to the radius and ends there at the point *l*. As to the remaining transverse nerves it may be generally said that in the lower wing there is (1) *no* radial, (2) *one* cubital at most, and *often none*, (3) *one* medial (= "recurrent") at most and *not rarely none*, (4) *one* areal which may end (at *w*) either *before*, *at*, or, as in Fig. 5, *after* the apex of the humeral area; and practically that is the whole of the transverse neurotation in it.

Characters derived from the lower wing are—(1) the presence or absence of the *cubital nerve*—not very reliable, since it is apt to vary; (2) the presence or absence of the *medial nerve*—here irregularities are less common; (3) the almost complete disappearance in certain Genera, *e. g.*, *Pseudodineura*, of the *humerus*, so that the humeral area is thrown, as it were, into the anal; and (4) a singular phenomenon which may be described as follows:—

In certain cases the hind-wing has what may be called a "continuous external neuration," that is to say, from *k*, the apex of the costa, a succession of veins and nerves run at a little distance from the margin of the wing to *g*, the apex of the humerus. Thus practically the whole neurated portion of the wing is encircled from *a* to *e* by one continuous nervure, consisting of *two whole* longitudinal veins (the costa and the humerus) and also apparently of *portions* of other nerves and veins—more or less displaced from their normal directions.

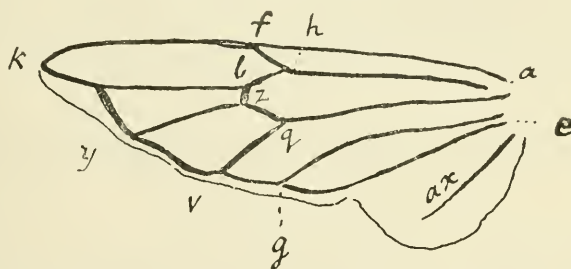
This sort of wing is not only remarkable in itself, but puzzling in the strangely "sporadic" manner of its occurrence among the Saw-flies.

It appears in widely different groups—sometimes characterizing a whole Genus, sometimes only one or more species in a Genus; and what is very singular, it seems to be found only in the males in all cases, but in these to be quite constant.

Thus it appears in all species of the Genera *Periclista* and *Perineura*, in all British species but one (*Coqueberti*) of *Tenthredopsis*, and in one species each of *Eriocampoides* and *Taxonus*—but as aforesaid only in the males!

How such a phenomenon is to be accounted for I cannot pretend to conjecture. Doubtless it must somehow benefit the insects exhibiting it, and certainly it benefits the systematist who is called upon to name them!

FIG. 6.—HIND-WING WITH CONTINUOUS EXTERNAL NEURATION  
OF A TENTHREDOPSIS ♂.



A very few words more may be said as to the wings.

(1) As to the word "cell," it means strictly a portion of an area *completely surrounded* by veins and nerves; but many writers apply it more loosely, *e. g.*, to a space bounded partly by veins and nerves and partly only by a veinless and nerveless margin. It is used thus when writers speak of "four cubital cells," an "open lanceolate cell," an "anal cell," &c.

(2) The term "Interstitial" is used when two or more distinct nerves (*e. g.*, a radial and a cubital) strike one vein at the same point, so that they form a continuous straight or crooked line.

(3) The terms *before* and *after* in descriptions of neuration mean respectively nearer to and further from the base of the wing.

(4) Though the course of all the "veins" on the whole, *i. e.*, measured from end to end, is *longitudinal*, certain portions of them may be so deflected from this course as to run actually transversely. This may at first cause some trouble; but one soon learns to see each "vein" *as a whole*, however it may zigzag at this point



or that, and then the difficulty ceases. (N.B.—These zigzags in the “veins” seem to be connected with differences of direction in the “nerves” which meet them, *e.g.*, a radius or cubitus is often sharply angled exactly at the point when a cubital nerve falls upon it, and so the medius is regularly angled at the point where the anal nerve proceeds from it). In several Genera curious and at first puzzling deflections of the radius or cubitus may be observed (*Sirex*, *Fenusa*, &c.).

(5) It should be noted that the crumpling of the wings to which dried specimens are so liable often quite distorts the apparent course both of veins and nerves, and may lead a hasty observer into error. Thus, nerves may look interstitial in a particular aspect without being so really, and a humeral area may look petiolate because the humerus has got close against the brachius owing to a shrivelling up of the anal and humeral areas. It is necessary to be constantly on one’s guard against such illusions. The transparency of certain nervures is another source of error to beginners. Thus, a *Hoplocampa*’s “contracted humeral area” can easily be misinterpreted as “petiolate;” or a pale transverse intercostal nerve be overlooked and supposed to be absent.

(6) It can hardly be repeated too often that the nerves of the radial and cubital areas are especially inconstant, and therefore that, though it is impossible to leave them out of account, the less we *rely* upon their characters the better. It is, I think, much to be regretted that Mr. Cameron’s Tables of Genera should bring these characters into such extreme prominence. I, for one, have been led by them to waste hours of fruitless enquiry over slightly abnormal specimens of well-known insects, which I should now recognise by other characters at a glance.

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## LEPIDOPTERA IN SOUTHERN SPAIN DURING THE LAST HALF OF OCTOBER, 1902.

BY A. H. JONES, F.E.S.

I left London on October 16th by a P. and O. steamer for Gibraltar, more in the hope of finding sunshine than with the prospect of meeting with much in the entomological way. The weather was bad in the Channel and in the Bay, but on October 20th, when in sight of land off Lisbon, the warmth and sunshine were an agreeable change. A good sized Geometer flew from the sea across the vessel at this spot; unfortunately I was unable to capture it, but I saw it sufficiently well to note that it was not a British species. This is an illustration that even the feeble-flighted Geometers fly or are blown out to sea a considerable distance, for we were quite ten miles away from the coast.

On the following day, after my arrival at Gibraltar, I started for Algeçiras, and thence by rail to Ronda; the railway winds its way through the Sierra de Ronda, and places along the route looked good collecting ground. Ronda is a town full of interest, and in the spring

time produces many good species of *Lepidoptera*, but I only saw a solitary dilapidated specimen of *Vanessa cardui*; this is not very surprising, considering the time of year (October 23rd) and the elevation (2460 feet). On the following day I started by train for Malaga by way of Bobadilla, a sort of "Clapham Junction" of Andalusia. After leaving this place the railway enters the valley of the Guadalhorce, and in a few hours reaches Malaga. I met with little here beyond a few butterflies and *Macroglossa stellatarum* in the Public Gardens, and, after a stay of a few days, left for Grenada. I had many hotels in Grenada from which to choose; fortunately I selected the "Hotel Washington Irving," finding it out of the town, near the Alhambra Palace, and close to apparently good collecting ground, also it is near the "Alameda de la Alhambra," a shady resort on a warm day. The trees, principally elms, so the guide books tell you, were brought by the Duke of Wellington from England in 1812, and with them it may be assumed, in some stage or other, two British moths, viz., *Ennomos alniaria* (*tiliaria*) and *Xanthia gilvago*,\* which were not uncommon on the gas lamps which lined the roads in the Alameda. I spent several days in Grenada, and made one somewhat long excursion on October 27th to the hills. The day, like all the preceding ones, was cloudless, still, and warm, the very perfection of a day for butterflies. *Pieris Daphidiee* was common and in many instances fine; *Colias Edusa* was not uncommon; and I also took two *Lycæna Lysimon*, a species I had never before met with.

The trains in Spain seem to leave at very inconveniently early times in the morning, and it was scarcely dawn as the omnibus left the hotel for the railway station; on this occasion I had no objection, as the journey to Seville was a long one for a Spanish railway. I arrived at about 7 o'clock in the evening at the Hotel de Madrid, one of the best hotels in Spain, I was told, and I certainly found it very comfortable.† The Parque Maria Luisa, about the size of Kew Gardens, I visited daily. *Pieris rapæ*, in fine condition, was the commonest butterfly. In the public gardens, however, on the banks of the Guadalquivir, among an abundance of flowering plants, butterflies were more plentiful, principally *Vanessa cardui*, *Lampides Telicanus* and *Lycæna Lysimon*.

I reached Gibraltar on November 1st in a perfect storm of wind and rain, auguring a bad passage back to England.

\* According to Staudinger's New Catalogue neither of these species is recorded from Spain, Central France being the farthest point south in Western Europe.

† For the benefit of Entomologists proposing to visit Southern Spain, I may mention that in the best Hotels I did not pay more than 12 pesetas 50 *vin compris* per day, whether stopping but one or two days, which, at the then rate of exchange, was equal to about 7s. 6d. per day.

Being so late in the season the number of species was naturally very limited, yet they were mostly interesting. I am indebted to Mr. Louis Prout and Sir George Hampson for identifying those which were somewhat obscure.

*Pieris brassicae*, Gibraltar, common and fine, October 21st; *P. rapae*, Seville, common and fine, October 31st; *P. Daplidice*, Grenada, October 27th, rather common, many specimens quite fine.

*Colias Edusa*, Malaga and Grenada, October 27th, rather common; *C. Hyale*, one, Grenada, October 27th.

*Gonepteryx Cleopatra*, ♀, Seville, October 30th.

*Vanessa cardui*, Malaga, October 23rd, Seville, common; *V. Atalanta*, Seville, October 30th.

*Pararge Aegeria* and *P. Megæra*, Grenada, Oct. 27th, the former in fine condition.

*Chrysophanus Phleas*, ordinary form, Grenada, October 27th.

*Lampides Telicanus*, Seville, October 30th, rather common.

*Lycæna Lysimon*, Grenada, two, not uncommon at Seville, males worn, October 30th;

*L. Icarus* (South of Europe form), Grenada, October 27th.

*Macroglossa stellatarum*, Malaga, October 24th.

*Pachnobia faceta*, at light, Grenada, October 25th, one specimen.

*Aporophyla mioleuca*, at light, Grenada, October 24th, one specimen.

*Xanthia gilvago*, at light, Grenada, not uncommon, October 25th, a small and poor form.

*Hypena lividalis*, one at light, Grenada, October 25th.

*Larentia ibericata*, common at light, Grenada, October 25th.

*Ennomos alniaria (tiliaria)*, common at light, Grenada, October 25th.

*Nemoria faustinata*, one at light, Grenada, October 25th.

*Gnophos mucidaria*, one at light, Grenada, October 25th.

*Acidalia rufomixtaria*, one at light, Grenada, October 25th.

*Pionea ferrugalis*, one at light, Grenada, October 25th.

Shrublands, Eltham, Kent:

February 9th, 1903.

# LITHOSIA DEPLANA, Esp., VAR. UNICOLOR, VAR. NOV.

BY EUSTACE R. BANKES, M.A., F.E.S.

I am grateful to Mr. Louis B. Prout for the information that he supplies (Ent. Mo. Mag., ser. 2, xiii, 263-4), with reference to *Lithosia deplana*, concerning the varieties to which Hübner gave the names *ochreola* and *luteola*, and since the striking unicolorous *sororcula*-like variety of the female, to which I recently drew attention (Ent. Mo. Mag., ser. 2, xiii, 230) appears to be nameless, I propose for it the name *unicolor*.

For the sake of convenience it seems advisable to repeat my description, which was as follows:—"The variety in question has the

fore-wings wholly rich orange-buff, without any tinge of grey, and with the whole costal margin, and the cilia, exactly concolorous with the rest of the wing, while the hind-wings are pale orange-buff tinged with grey, especially near the inner margin, and have orange-buff cilia."

Norden, Corfe Castle:

December 31st, 1902.

*KERMES QUERCÛS*, LINN., A COCCID NEW TO BRITAIN.

BY R. NEWSTEAD, A.L.S., &c.

This interesting addition to our fauna was discovered by Mr. Harold J. Burkill at the foot of the S. W. slope of Wimbledon Common, near the Beverley Brook. The first batch of specimens reached me through my friend Mr. George Nicholson, to whom, I believe, they were sent as vegetable galls. On hearing of the importance of this discovery, Mr. Burkill made several expeditions to the locality, obtaining a further supply of specimens, and also some important information with regard to the local distribution of the species.

In his first communication, dated May 22nd, 1902, he says the scale insect "was on the trunks of three trees all near together, but not on some of the trees in between these, and seemed to extend from about three to eight feet from the ground. The trees were all of small size in development, the trunks being about ten inches or slightly less in diameter, and the insects were to be found all round the trunk, and not restricted to one special aspect. I should estimate the number at about 100 to 200 on the three trees. My second visit, when I got the specimens sent to you, was a very hurried one in a bad light, so there may be other trees attacked that I was near but did not notice." In the second letter, dated June 18th, Mr. Burkill adds, "I have been to the locality the last three Sundays. \* \* \* There are a good number of trees infested; I should think I have seen the old skins of the insect on forty or more, but many likely looking trees in the same area seem to be free, and where the trees are more exposed the insects seem to prefer the south-east side, though a few specimens are on the opposite side. I have only been able to find one male, and that disappeared on the way home."

The material sent to me consisted, for the most part, of old dead females containing the effete skins of the ova; but a careful examination of the crevices of the bark revealed three immature females enveloped in wax and woolly filaments; and there were also two empty male puparia attached to a small fragment of bark, from one of which the male referred to by Mr. Burkill probably emerged, and subsequently escaped from his collecting box.

On July 15th in the same year Mr. Brockton Tomlin found the species in great numbers at Sherwood Forest, and from a freshly fallen tree obtained a fine series of females *in situ*. The Sherwood examples contained living larvæ which continued to hatch for a week or more after they came into my possession.

Outside the British Isles the species has been found only on the Continent of Europe. It had, apparently, been lost sight of for nearly a century, when it was re-discovered by Dr. K. Sule at Jrebon, Bohemia, in July, 1899; shortly afterwards it was taken by Karl L. Kafka in Moravia; and in September, 1899, Dr. L. Reh found examples at Borstel, near Hamburg. I am much indebted to all three collectors for a liberal supply of specimens, which are specifically identical with those found in this country. Figures will appear in the second volume of the "*British Coccidæ*" published by the Ray Society.

Grosvenor Museum, Chester :  
February, 1903.

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COLEOPTERA COLLECTED AROUND CONSTANTINOPLE DURING  
THE WINTER 1901-1902.

BY MALCOLM CAMERON, M.B., R.N., F.E.S., H. M. S. "HARRIER."

Having had the good fortune to spend a winter at Constantinople, I have thought a list of the species of *Coleoptera* there met with might be useful.

The climate of this region may be said to be good, that is, it is not subject to the amount of heat found in Greece in the summer; the prevailing winds during these months are from the Black Sea, and to them is due the pleasantness of the weather along the Bosphorus. The hottest month appears to be August, with a mean temperature of 74·5°, and the coldest, February, with a mean of 41°. In the winter the N.E. wind is often accompanied with snow, copious rainfall or fog, and Constantinople in these times is dreary and dirty, owing to the cobbled streets, leaking parapets, and bedraggled street dogs; these last being one of the features of the place.

However, the winter months are by no means continually cold and dirty; frequently the wind will shift to the S.W., and then comes a two or three days' spell of genial sunny weather, when the collector can explore the surrounding country with at all events profit to himself; pleasure also if the mud is not minded. Constantinople is remarkable for these sudden changes of wind and weather.



A striking thing about the country is the absence of trees and shrubs: pass outside the town and you find low grass-clad hills cut by narrow ravines draining on the one hand into the Golden Horn, and on the other into the Bosphorus; except for a group of tall cypresses marking here and there a cemetery, trees are practically absent. It is much the same at Scutari on the Asiatic side.

This barrenness, however, must not be thought to be the feature of the Bosphorus generally; further north along its shores the most varied country presents itself, rivulets, low wooded hills and valleys making a most picturesque scene. Unfortunately, I had no opportunity of collecting in any of these charming spots, and the present paper deals entirely with *Coleoptera* obtained within about six or seven miles of the centre of the town, from December 1st, 1901, to April 20th, 1902, during which period also I had opportunities of collecting in other parts of Turkey when cruising.

Constantinople is an extensive city, its suburbs spreading far along the shore of the Golden Horn on the one hand, and the Bosphorus on the other, also directly northward. The roads are, however, so bad as to preclude the use of the bicycle to reach the open country, but advantage may be taken of the tram, which runs along the shore of the Bosphorus to near Bebek in one direction, and directly north to Chichli in another, the continuation of which is the main road to Therapia, a charming spot, the summer resort of the various Embassies. In this direction will be found the best collecting grounds, notably in the "Valley of the Sweet Waters of Europe" (or Kiathani Valley), which empty themselves into the top of the Golden Horn, or at scattered spots along the road itself. The limits of the area collected over are the Golden Horn on the one side, the Bosphorus on the other, and a line joining the lip of the former with the old Jewish Cemetery at Rumeli Hissar on the latter.

The list is as follows:—

*Carabus coriaceus*, v. *rugosus*, Dej., common, and generally distributed; *C. montivagus*, Palld., under stones on the low hills around Kiathani Valley, not common. *Nebria brevicollis*, F., generally distributed. *Notiophilus substriatus*, Waterh., a single specimen in Kiathani Valley. *Bembidion lampros*, Herbst; *B. castaneipenne*, Duv.?, one example near streamlet on the Kiathani Hills; *B. monticola*, Sturm, common; *B. 4-guttatum*, F., not uncommon. *Tachys bisulcatus*, Nicol., two or three specimens in shingle in the valley; *T. hamorrhoidalis*, Dej., common. *Perileptus areolatus*, Creutz., sparingly, with *T. bisulcatus*. *Trechus 4-striatus*, Schrank, common. *Agonum viridicupreum*, Goeze, very common over a limited moist area in the valley; *A. numidicum*, Luc., one or two in same locality;

*A. marginatum*, L., common, with the two preceding. *Olisthopus glabricollis*, Germ., not uncommon on the hills; *O. fuscatus*, Dej., in damper spots. *Culathus fuscipes*, Goeze, common everywhere. *Pecilus cupreus*, v. *affinis*, Sturm, common in the valley. *Amara trivialis*, Gyll., common. *Harpalus oblitus*, Dej., one example; *H. cupreus*, Dej., five or six specimens, all having red legs; *H. pygmaeus*, Dej., common on a piece of waste ground next the house of Saïd Effendi on the Therapia Road; *H. psittaceus*, Fourc., common on sunny days, running in the roads; *H. dimidiatus*, Rossi, common, with *H. pygmaeus*. *Stenolophus teutonius*, Schrank, in damp places. *Acupalpus dorsalis*, F., common; *A. consputus*, Duft., one example. *Licinus silphoides*, Rossi, not uncommon, under stones, near cultivated ground. *Chlanius festivus*, F., not uncommon with *A. viridicupreum*. *Lebia cyanocephala*, L., not common. *Metabletus pallipes*, Dej., and *M. truncatellus*, L., not common. *Blechnus glabratus*, Duft., common. *Brachynus immaculicornis*, Dej., with *A. viridicupreum*, two examples; *B. explodens*, Duft., common. Practically nothing was obtained from water, as would be expected at this time of the year; the only species were *Bidessus geminus*, F., *Laccophilus interruptus*, v. *testaceus*, Aubé, *Helockares dilutus*, Er., *Cyclonotum orbiculare*, F., *Gyrinus natator*, Ahr. *Ilyobates forticornis*, Lac., two examples under stones, near Bebek. *Oryzopoda opaca*, Grav., in Kiathani Valley. *Drusilla canaliculata*, generally distributed. *Homalota cavifrons*, Sharp, one example under a stone in the valley; *H. atramentaria*, Gyll., in dung. *Gnypeta labilis*, Er., in the marsh in the valley. *Falagria obscura*, Grav., common generally. *Myllana tenuicornis*, Fvl., one specimen in stream shingle in the valley. *Oligota pusillima*, Grav., under stones near Bebek. *Hypocypus seminulum*, Er., and *H. laeviusculus*, Mannh., in the same locality. *Tachinus collaris*, Grav., and *Mycetoporus splendens*, Marsh., Kiathani Valley. *Acylophorus glabricollis*, Lac., one specimen in a marshy place in Kiathani Valley on April 20th. *Quedius tristis*, Grav., and *Q. rufipes*, generally distributed. *Ocyopus olens*, Müll.; *O. mus*, Brull., and *O. tomentosus*, Baudi, not uncommon in the valley beneath stones. *Philonthus ventralis*, Grav., same locality. *Xantholinus relucens*, Grav., and *X. linearis*, Ol., here and there under stones near cultivated ground; *X. grævus*, Kr., one or two only in Kiathani Valley. *Lathrobium apicale*, Baudi, one or two near water's edge in Kiathani Valley. *Medon fuscus*, Mannh., under stones in damp places, common; *M. melanocephalus*, F., not common. *Stilicus orbiculatus*, Payk., common. *Sunius filiformis*, Latr., generally distributed; *S. angustatus*, Payk., common. *Paderus fuscipes*, Curt., common. *Scopæus sulci-collis*, Steph., very sparingly. *Stenus bimaculatus*, Gyll., common; *S. circularis*, Grav., here and there; *S. providus*, Er., in marshy spot in the valley; *S. morio*, Grav., not uncommon on the piece of waste ground near Saïd Effendi's house; *S. elegans*, Rosenh., one specimen under a stone near Bebek. *Platystethus alutaceus*, Thoms., common in all stream banks. *Bryaxis xanthoptera*, Reichb., here and there under stones near cultivated land. *Bythinus*, n. sp.,\* two examples, ♂ and ♀, off the piece of waste land before mentioned. *Ctenistes palpalis*, Reichb., sparingly distributed. *Euconus intrusus*, Schaum, here and there. *Tetramelus*, n. sp.,† beneath a stone near Bebek. *Cyrtoscydmus scutellaris*, Müll., same locality. *Leptomastax Coquereli*, Fairm., in the nest of a small black ant beneath a stone in a copse near Bebek. *Choleva Engeli*, Rtt., one example. *Catopomorphus orientalis*, Aubé, in nests of a large ant living under stones, sometimes four or five will be

found in the same nest; they are very active, and readily escape; I first found the insect on the waste land spoken of above. *Catops coracinus*, Kelln., near Bebek, one example under a stone. *Silpha orientalis*, Brullé, one or two found on the finer days crawling about on the hills. *Lithophilus connatus*, Panz., abundant under stones on all the hills. *Atomaria ruficornis*, Marsh., and *A. rubricollis*, Bris., sparingly, under stones. *Ephistemus globulus*, Payk., common. *Melanophthalma fulvipes*, Com., occasionally. *Meligethes subrugosus*, Gyll., one or two floating in a ditch in the valley. *Curimus insignis*, Steff., under stones near cultivated ground on the hills. *Thorictus grandicollis*, Germ., not uncommon. *Hister 4-maculatus*, L., in the valley under stones; *H. 12-striatus*, Schlr., generally distributed. *Triballus minimus*, Rossi, not common. *Sisyphus Schaefferi*, L., not uncommon. *Onthophagus Amyntas*, Oliv., occasionally. *Aphodius prodromus*, Brahm, *A. pubescens*, Sturm, and *A. tristis*, Panz., in their usual habitat; *A. pubescens*, Sturm, also common, flying towards evening. *Drasterius bimaculatus*, Rossi, common. *Agriotes sputator*, L., and *A. lineatus*, L., several examples of both in the Kiathani valley. *Telephorus pulicarius*, F., two from the valley. *Haploenemus*?, n. sp., one example, crawling on a tree trunk in the last mentioned locality. *Bruchus (Plinus) brunneus*, Duft., in a house in the town. *Eutaphrus*, n. sp., under a stone near Bebek. *Gnathosia Carceli*, Sol., not uncommon and generally distributed. *Stenosia orientalis*, Brullé, fairly general; it is quite common round the old walls of Stamboul on the other side of the Golden Horn. *Dendarus cribratus*, Waltl, near the old Jewish Cemetery of Rumeli Hissar. *Pedinus meridianus*, Muls., in the valley. *Opatrum libanii*, Bandi, near cultivated fields. *Nalassu plebejus*, Küst., common on tree trunks. *Otiorrhynchus crispus*, Boh., one example. *Meira*, n. sp., many specimens from the piece of waste ground next Saïd Effendi's house, to which it appears to be restricted; I have not found it in any other part of Turkey. *Myllacus indutus*, Kiesw., same locality. *Sitones hispidulus*, F., and *S. lineatus*, L., common. *Echinocnemus pugnax*, Faust, *Acalles denticollis*, Germ., both from the little copse near Bebek. *Hygelines vestitus*, Rey, on an oak tree. *Dorcadion ferruginipes*, Mén., not uncommon on the hills; *D. 7-lineatum*, Waltl, much less common. *Neodorcadion laqueatum*, Waltl, rare. *Chrysomela vernalis*, v. *ottomana*, Weise?, common; *C. chalcites*, Germ., one specimen. *Galeruca tana-celi*, L., and *G. rufa*, Germ., sparingly. *Ochrosis ventralis*, Ill., *Psylliodes picina*, Marsh., *Haltica tamaricis*, Schlr., *Hermaphysa ruficollis*, All., *Phyllotreta variipennis*, Boield., *P. atra*, F., *P. Foudrasi*, Bris., *P. corrugata*, Reiche, *P. procera*, Redtb., *Aphthona pygmaea*, Kutsch., *Longitarsus parvulus*, Payk., *L. luridus*, v. *cognatus*, Weise, and *L. melanocephalus*, Deg., would all doubtless have also occurred later in the year. Amongst the *Coccinellidæ* the only species met with were *Exochomus 4-pustulatus*, v. *bilunulatus*, Weise, *Rhizobius litura*, F., *Scymnus biguttatus*, Muls., and *S. frontalis*, v. *4-pustulatus*, Herbst.

In conclusion I must tender my best thanks to Mons. A. Fauvel for the determination of many of the *Staphylinidæ*, and to Herr E. Reitter for his assistance with the other groups.

Aden: November 27th, 1902.

\* Sub genus *Machverites*.

† Appears to be a near neighbour of *T. Dorotheanus*, Rtrr., from Dalmatia and Montenegro.

## COLEOPTERA COLLECTED IN THE GULF OF ISMID.

BY MALCOLM CAMERON, M.B., R.N., F.E.S.

The Gulf of Ismid is a beautiful arm of the Sea of Marmora, twenty-seven miles in length. It is a deep cut through the mountains in an east and west direction, and varies from one to five miles in width. Its shores are very picturesque, and present a varied scene of tree clad mountain, valley, and plain, there are numerous villages and a good deal of cultivated land, a great deal, however, is wasted. I had the opportunity of collecting at two places, viz., at Derinji Burnu and Ismid, which is about five miles from the former place and at the head of the Gulf.

Although early in the year (January 28th, 1902), the sun was shining, and it was such a day as is occasionally met with in early spring in England, and so one could not complain. Derinji can hardly be called a town; what there is of it doubtless owes its existence to the station of the Anatolian Railway, which taps the grain-producing districts of this region. Striking at once inland across the railway line a stretch of waste land is first met with, where the loose stones were examined not unprofitably. Soon the land rises to form low hills and valleys, thickly wooded with a young and dense growth of birch, hazel, oak, and ilex, which is so thick in parts that it is impossible to make one's way through, whilst in the open spots the ground is covered with *Cistus* and heather (*Erica mediterranea*?), the latter reaching the level of one's shoulders. At the bottoms of the valleys many streams rush down to the sea, their banks thick with undergrowth. It would be an ideal place for collecting in May; at my visit there was of course nothing in blossom, and beating and sweeping were unproductive. Here is the list:—

*Ophonus azureus*, F., *Harpalus punctato-striatus*, Dej., and *H. metallinus*, Mén., under stones on the waste ground. *Oxygoda hæmorrhœa*, Sahlb., in *débris*. *Aleochara lanuginosa*, Grav., in dung. *Drusilla canaliculata*, F., under stones, *Atheta orbata*, Er., in *débris*, common; *A. cava*, Fvl., with the preceding, not common. *Falagria obscura*, Grav., common. *Leptusa anatolica*, Fvl., one specimen in *débris*. *Oligota pusillima*, not common, in *débris*. *Heterothops dissimilis*, Grav., in *débris*, not uncommon. *Philonthus ebeninus*, Grav., common, in *débris*. *Scopæus minutus*, Er., one or two under a stone. *Oxytelus piceus*, L., with the preceding. *Ctenistes*, sp.?, one under a stone. *Trichopteryx atomaria*, Deg., and *Typhæa fumata*, L., common, in *débris*. *Aphodius conjugatus*, Panz., *A. fæstens*, F., *A. constans*, Duft. (very abundant), *A. pubescens*, Sturm (very abundant), *A. luridus*, v. *nigripes*, F., all in cow-dung. *Adelocera punctata*, Herbst, one specimen, out of dead wood. *Elatér elongatulus*, v. *balteatulus*, Reitt., one example under bark. *Silesis concolor*, Desbr., one, with the preceding; doubtless these latter were hibernating. *Cis striatulus*, Mell., one out of dead wood. *Læna*



*Ganglbaueri*, Reitt. ?, one, under bark. *Nalassus plebejus*, Küst., the same habitat, common. *Helops*, ?, n. sp., one, also under bark. *Anthicus floralis*, F., common, in *débris*. *Brachycerus*, n. sp., one, out of *débris*. *Chrysomela menthastri*, Suffr., one under a stone.

Early the next morning, January 29th, we left for Ismid, which is about five miles further east at the head of the gulf, and is the old Nicomedia, capital of Bithynia, and residence of the Roman Emperors. Now it is a dilapidated town, more than half its houses empty and in ruins, and with a population of about 4000. It stands on the side of a hill looking south, and is picturesque in its decay. The eastern shore of the gulf is practically occupied by the delta of the Kiles Deresi river, the hills retreating inland, and leaving a large area of swamp and pasture land, drained by this river, which arises behind the lofty Gink Dag mountain, flows through a fine valley and discharges by several mouths through swamps and marshes into the gulf. This was a very different day from the preceding, a biting N.E. wind, drizzling with rain off and on, and being wet through from wading in the swamps, made collecting far from pleasant, especially as it consisted solely in the examination of heaps of *débris* largely composed of stems of *Phragmitis*, of which there were plenty. Here is the list:—

*Bembidion Chaudoiri*, Chd., var. *Tachys hæmorrhoidalis*, Dej., common; *T. bisulcatus*, Nic., a few. *Pogonus reticulatus*, Schaum, *P. punctulatus*, Dej., rare. *Agonum numidicum*, Lac., not uncommon. *Dichirotrichus obsoletus*, Dej., common. *Stenolophus teutonius*, Schr., common. *Amblystomus levantinus*, Reitt., one or two. *Dromius sigma*, Rossi, one or two. *Brachynus psophia*, Dej., and its variety *plagiatus*, Reiche. *Falagria nigra*, Grav., common. *Conurus pedicularius*, Grav., one or two. *Doliceon biguttulus*, Lac., one example. *Achenium tenellum*, Er., not uncommon. *Paderus fuscipes*, Curt., common. *Stenus melanopus*, Marsh., not uncommon; *S. affaber*, v. *callidus*, Baudi, *S. crassus*, Steph., *S. circularis*, Grav., *S. nanus*, Steph., more abundant. *Trogophloeus corticinus*, Grav., a few. *Cryptobium fracticorne*, Payk., a few. *Olophrum puncticolle*, Epp., one specimen. *Bryaxis paludosa*, Peyr., and *B. Schüppeli*, Aubé, not uncommon. *Rybaris sanguinea*, L., sparingly. *Pselaphus Heisei*, Herbst, a single specimen, under a stone in pasture land. *Cyrtoscydmus pusillus*, Müll., and *Scydmenus tarsatus*, Müll., sparingly. *Stilbus oblongus*, Er., not uncommon. *Telmatophilus Schönherri*, Gyll., a few. *Arthrolips regularis*, Reitt., not uncommon. *Psammæus bipunctatus*, F., *Dermestes undulatus*, Brahm, *Throscus obtusus*, Curt., not uncommon. *Anthicus minutus*, Laf., and *A. humilis*, Germ., both common. *Pachnephorus canus*, Weise, and *P. villosus*, Duft., one or two of each. *Chrysomela Sahlbergi*, Mén., one example. *Haltica tamaricis*, Schr., a few. *Bulæa Lichatschovi*, v. *salina*, Weise, one specimen. *Hyperaspis reppensis*, Herbst, and *Scymnus biguttatus*, Muls., a few.

I am much indebted to MM. Fauvel and Reitter for many of the determinations.

Aden: November 27th, 1902.



ON THE OCCURRENCE IN NORFOLK OF *ÆDEMERÀ VIRESCENS*,  
LINN., A SPECIES NOT HITHERTO RECORDED AS BRITISH.

BY JAMES EDWARDS, F.E.S.

I have just discovered that the species of *Ædemera* found in a restricted area in Central Norfolk is not, as I had previously supposed, *Æ. lurida*, Marsh., but *Æ. virescens*. Linn. So long ago as June, 1884, I took in the locality in question two specimens of a dull sage-green *Ædemera* with simple hind femora, which I could only regard as a large form of *Æ. lurida*. Quite recently, however, in looking over my undetermined Norfolk material in *Heteromera* it became evident that these specimens were the females of a species in which the males have incrassate hind femora, and therefore could not be *Æ. lurida*, Marsh. I subsequently made them out to be *Æ. virescens*, Linn., and my determination has been confirmed by Mr. Champion.

The British species of *Ædemera* will therefore now be distinguished as follows :—

- 1 (2)—Upper-side shining emerald-green, golden-green, or coppery ; hind femora of male very strongly incrassate ..... *nobilis*, Scop.
- 2 (1)—Upper-side dull sage-green.
- 3 (4)—Hind femora of male distinctly incrassate ..... *virescens*, Linn.
- 4 (3)—Hind femora of male simple ..... *lurida*, Marsh.

As a rule the female of *Æ. virescens* is evidently larger than that of *Æ. lurida*, and has the raised line down the middle of the thorax much more distinct ; but after a careful study of considerable material I am forced to the conclusion that this sex of the two species cannot be separated with certainty apart from the males. Mulsant (*Coléoptères de France*, Angustipennes, pp. 149–154) describes both species in great detail, but he does not appear to have been more fortunate than myself in discovering any real index character for their females ; he says that *Æ. virescens* occurs principally in the cool or mountainous parts of France, and is found on flowers in woodland rides from June to August.

The species of *Ædemera* must occur very sparingly in Norfolk, since none of the many able non-resident collectors who furnished material for the “List of Norfolk *Coleoptera*” mentioned either species. Their known distribution in the county is as follows :—*Æ. nobilis*, in the district immediately east of Norwich only, one pair, Dossitor ; ditto, Thouless : *Æ. virescens*, Central Norfolk, in one locality only, but there not uncommon : *Æ. lurida*, Norwich District, July 29th, 1874, one female, June 7th, 1875, one male, Edwards ;

Dossitor, who collected beetles in the district immediately to the east of Norwich almost daily between 1876 and 1887, left but eight examples in his collection, although it was his practice to keep long series.

Here, on the Cotswold Hills, *Æ. nobilis* occurs sparingly on flowers of *Umbelliferae*, and *Æ. lurida* is common on the flowers of *Helianthemum*, &c.

*Æ. virescens* is a very widely distributed species on the continent, occurring in Scandinavia, Germany, France, Switzerland, Austria, Italy, &c.

Colesborne, Cheltenham :

February 11th, 1903.

*Spilodes sticticalis* and *Botys terrealis* in Scotland.—I am, and have been for some time past, indebted to Mr. W. Evans, of Edinburgh, for information as to the species to be found in Scotland, in the comparatively neglected groups usually massed together under the name of *Micro-Lepidoptera*. Recently he has devoted some attention to the Scottish *Pyralites*, with the excellent result of bringing in some information from an old correspondent (Mr. J. Ross, formerly of Anstruther, now of Kirkealdy, Fife), which should, I think, be promptly made known rather than held back for more tardy appearance in my work.

With regard to *Spilodes sticticalis*, Mr. Ross says, "On the 27th June, 1901, I was just getting over a fence when I saw the first, and it struck me as something new, so I hurried after and took it; then looked to see whether there were others about, and continued on till I had taken eleven more, of which one was damaged and of no value. On killing them I saw that they were of a species that I had not got before and new to me. Later in the season I went to Aberdeen to see my friend Mr. Horne, and took two of these specimens in my box, when he identified them. Last year I looked out for more, but we had a cold summer, and I did not meet with any."

One of these specimens Mr. Ross has most kindly sent to me. It seems probable that at this time (June, 1901) there may have been a small migration of the species, since I hear that another was taken on the same day—and I think that it certainly is a rare species in Scotland, if indeed a constant inhabitant at all.

Of *Botys terrealis* Mr. Ross says, when sending me a genuine specimen, "I have always taken this for a dark form of *fuscalis*. It is not plentiful, indeed, very scarce here, but I have generally taken three or four every season." Certainly it is somewhat like *B. fuscalis*, but of a different shape, its fore-wings being so much longer, and somewhat narrower, its colour is more sooty, though probably this arises from the more northern habitat, but I feel little doubt that, when more carefully looked for, *B. terrealis* will prove to be more widely distributed in Scotland than is at present supposed. It is a species quite readily overlooked.—

CHAS. G. BARRETT, Tremont, Peekham Rye, S.E.: February, 1903.

*Dark variety of Catocala nupta.*—We have now in our collection a very fine specimen of *Catocala nupta*, which we took at sugar on September 19th last in a thicket near South Croydon. It is a male, absolutely fresh, and of that dark aberrant form, very few specimens of which, we believe, are to be seen in British collections. The fore-wings are suffused with a darker grey than is usually found in the normal type; the pale blotch which precedes the ren. st. is almost entirely wanting, and the ren. st. itself is on a dark brown patch; the inner and elbow lines are normal. The hind-wings are distinguished from those of an ordinary *nupta* in the fact that the bright red is changed to deep brown. Over the black central band and the deep black border is suffused a purplish tint, which, in certain lights, produces a beautiful effect not unlike that found in the male of *Apatura Iris*, or in the female of *Thecla quercus*. The thorax is clouded with sepia and more densely clothed than in the normal type, this peculiarity specially showing itself in the femora of the front legs, which are very woolly in appearance. The hind-wings terminate in the usual white fringe, but owing to the entire absence of red, this feature is brought out into unusually pleasing prominence. We took the insect on an oak tree with considerable excitement, for at first sight nothing so strange had visited us before, nor could any other *Catocala* have looked less like *C. nupta*. The purplish gloss to which we have already alluded entirely deceived us when we came to closely examine it by the light of the lantern; what turned out to be brown by daylight, appeared purple by lamplight; while on the oak tree we took it for a *C. fraxini*. When it was in the bottle we imagined we had captured a most extraordinary variety of *nupta*, or perhaps a new species, in which the bright red had been transformed into purple. It has passed through the ordeal of setting with complete success, and no injury has marred its freshly emerged condition. The under-side is as interesting as the upper-side. Here the rosy pink of the hind-wings is replaced by dark brown, and the white which adorns the abdomen and portions of both upper and under wings is altered into a very light grey, the effect, we believe, of that purplish gloss which spreads itself over the whole moth on both sides. Although, upon careful examination, we can find no departure in markings from those distinctive of the normal type, yet there is a certain woolly and rugged look about the insect which almost suggests a new species. If such a thing were possible, no better means could be adopted for an absolute test than an exhibition of all the specimens which have so far been captured, together with a good display of the types most frequently met with in this country. We have only seen one other like our own, and that is in the collection at the British Museum. It is somewhat lighter in hue, but whether from age or not we cannot undertake to say. Mr. C. G. Barrett mentions one example of this variety in his "*Lepidoptera of the British Islands*."—F. W. and E. ANDREWS, 192, Devonshire Road, Forest Hill, S.E.: February, 1903.

*Luperina testacea*, Hb. at treacle.—In the Ent. Mo. Mag., Ser. 2, xiii, 222, I recorded three instances that came under my notice in the years 1900-1, in which *Luperina testacea* was observed sitting beside the patches of "sugar," and eagerly sucking up the treacle through its outstretched tongue. I am now able to add two more instances to the above, for, while sugaring in Devonshire in September last, I watched both a male and a female of this species regaling themselves in a precisely

similar manner, though on different nights. The male seemed determined to make the most of his opportunity, for his feast, which had been begun before 8.15 and was not concluded at 9.15 p.m., when I again visited the spot. These observations clearly show that the general belief, that a "sweet tooth" has been altogether denied to *L. testacea*, is quite untenable.—EUSTACE R. BANKES, Norden, Corfe Castle: December 31st, 1902.

*Leucania l-album*, L., in South Devon.—On October 3rd, 1901, at 7.25 p.m., I had the good fortune to capture at sugar in South Devon, not 100 miles from Plymouth, a great prize in the shape of a specimen of *Leucania l-album*. The night was one of those—all too few, alas—on which, with a very warm south-west breeze, and the sky black with gathering rain-clouds, the attractions of sugar seem quite irresistible. On ascertaining that the moth, which unfortunately was rather worn, was a female, I was sorely tempted to keep her alive in the hope of obtaining ova, but in view of the facts that there was, at that time, no thoroughly reliable record of the occurrence of the insect in Britain, and that the chances of her being fertile seemed to me decidedly small, I reluctantly determined to kill and set her while still in clearly recognisable condition. I was, of course, not then aware that a fine specimen of *L. l-album* had been taken at sugar at Sandown, Isle of Wight, by Mr. S. J. Bell, about three weeks previously, as recorded by him in Ent. Record for November 15th, 1901, and had no knowledge of the existence of the example referred to Ent. Rec., xiii, 376. There is some reason for believing that one specimen of *L. l-album* was really captured near Canterbury by Mr. F. J. Parry in 1869, as recorded in Entom., iv, 355, though in view of what is known about the reputed productions of that district, the record cannot be accepted with any degree of confidence, while further captures of the same species near Canterbury, must, of course, not be taken at all seriously.—ID.: January 2nd, 1903.

*Striking sexual distinction in Leucania albipuncta*, Fb.—It may be useful to draw attention to an interesting, but apparently little known, sexual distinction in this rare and attractive species. Some time ago, when determining, by an examination of the frenulum, the sex of some imagines, I was at once struck by the fact that every male exhibited, on the under-side, near the base of the abdomen, a conspicuous tuft of black hairs, of which there was no trace whatever in any of the females. A more critical examination showed that this tuft was in reality composed of two converging tufts, arising one on either side of the central line. On subsequently consulting Mr. C. G. Barrett's "*Lepidoptera of the British Isles*," v, 173, I found that, while carefully describing the under-side of *L. albipuncta*, he omits all reference to this striking sexual distinction, though mentioning it in the case of its well-known congener, *L. lithargyria*. My esteemed friend will, however, pardon me, I feel sure, for pointing out that he inaccurately gives this black tuft as arising on the femora of the hind-legs, whereas it has no connection with these, but is, in both species, attached to the abdomen near the base: this is easily proved by breaking off the abdomen at its junction with the thorax, when all the legs will, of course, remain on the latter, while the black tufts will come away with the former. I notice that Mr. Meyrick in his "*Handbook of British Lepidoptera*," p. 68, refers



to the existence of this tuft in the male of *L. albipuncta* as well as in that of *L. lithargyria*, and correctly gives it, in both cases, as attached to the abdomen.—  
ID. : January 17th, 1903.

*Acrobasis tumidana*, Schiff. (*rubrotibiella*, F. R.), in South Devon.—I am pleased to be able to record the occurrence of this little-known and extremely local species in South Devon, especially as it has not, so far as I am aware, ever previously been taken, as regards Britain, to the west of the Isle of Wight. A single specimen, a female in fine condition, was taken by myself at sugar on August 26th, 1901; the date seems unusually late, but it will be remembered that most insects were considerably behind their normal times in that year, owing to the backwardness of the season. It may be as well to point out that the sadly confused synonymy of *A. tumidana*, Schiff. (*rubrotibiella*, F. R.), and its very close ally, *A. Zelleri*, Rag. (*tumidella*, Zk.), was revised and corrected by the late Mons. Ragonot in Ent. Mo. Mag., xii, 27-8 (1885).—ID. : January 2nd, 1903.

*Aculeate Hymenoptera in East Kent in 1902.*—The past year has been by no means a bad year for *Aculeate Hymenoptera*, and I have added several species to my local list. One peculiarity has been the abundance of males of species which in previous years had been difficult to procure. I put this down to the broken weather, and the long time during which the summer species were about. This latter fact was very noticeable, and seems to have been due to the cold weather retarding the emergence of the various insects. The ♂ of *Prosopis dilatata*, Kirb., occurred from the 3rd to the 30th of August, and the ♀ from August 3rd to September 18th, while a few *cornuta*, Sm., ♂♂ were taken during the first ten days of August. *P. communis*, Nyl., *signata*, Panz., *hyalinata*, Sm., *confusa*, Nyl., and *brevicornis*, Nyl., all occurred here during August. I found two *Masoni*, Saund., ♀♀ while collecting with Mr. Sladen at Kingsdown on August 15th. Among the *Halicti*, *pauxillus*, Schk., turned up in the early part of August, and a species closely allied which seemed to be unnamed, also one specimen of *H. larigatus*, Kirb. (which is new to my district) on September 18th. One *Andrena Cetii*, Schr., ♀ was found on Scabious on September 10th, the first I have seen here. Both sexes of this insect were abundant at Kingsdown on August 15th, where I also took one *A. Hattorfiana*, Fab., ♀ in splendid condition, though usually a July insect. *Andrena denticulata*, Kirb., is quite new to me here, and occurred, ♂ on August 12th, ♀ August 21st. The only other note which I have on the genus is that on April 2nd I took five male *rosæ*, Panz., on a willow bush. On my return, I found every one was of the var. *spinigera*, a fact which points to this variety being possibly a race. The higher bees belonging to the subfamily *Apidae* have been very scarce this year. *Megachile maritima*, Kirb., ♂ turned up for the first time, and I found *O. pilicornis*, Sm., at Charing on June 22nd, but have found nothing else worth special notice. Among the parasitic bees, *Nomada fucata*, Panz., was by no means uncommon, apparently parasitic on *A. fulvicrus*, Kirb. The next species, *N. solidaginis*, Panz., was abundant. I did not previously know that this common *Nomada* occurred here, but found I had previously taken one specimen, which I had mixed with *jacobaeæ*, Panz., with which it was found on the ragwort. I was much disappointed not to get *sexfasciata*, Panz., as *Eucera longicornis*, Linn., was un-



usually abundant, most of my specimens of *Nomada* were ♂♂. Passing to the ants, I noticed *Ponera contracta*, Latr., on Charing Hill on June 21st. In one case there was a little colony, but I only noticed workers which soon disappeared into the earth. Amongst the sandwasps I found one *Pompilus unicolor* on August 3rd, a large female with an unusual amount of red at base of abdomen, a pair of *Calicurgus hyalinatus*, the ♂ on September 11th, the ♀ in my garden on September 26th. The latter has a very sharp sting. The only previous record from Kent appears to be a solitary ♀ from here in 1901, it is evidently inclined to be a late insect, but my previous capture was on August 4th. *Ceropales maculatus* was fairly abundant during August, and continued as late as the 7th of September, while I took a single ♀ *Agenia variegata*, Linn., on October 7th, the black insect was running about on a tarred gate post. *Crabro gonager*, Lep., *lituratus*, Panz., ♂, *pubescens*, Shuck., one ♂ from Charing, 21st June may also be mentioned.—ARTHUR J. CHITTY, Hunting-field, Faversham: February 14th, 1903.

*Meloë rugosus*, Marsh., at Broadstairs. — Another example of this rare insect has recently been sent to me from Broadstairs, where it was found crawling upon the road on December 13th. There can be very little doubt that the insect hibernates, and that a warmer day than usual brings it out from its retreat. The Isle of Thanet is highly favoured by *Meloideæ*, as I have taken four species, *M. proscarabæus*, *M. variegatus* (3), *M. cicatricosus* (about 20), and *M. rugosus* (4) within a couple of miles from Broadstairs.—THEODORE WOOD, The Vicarage, Lyford Road, Wandsworth Common: January 4th, 1903.

*Miscellaneous Notes on British Heteroptera*.—During the past few years I have picked up such *Heteroptera* as have come in my way while collecting *Coleoptera*, and the following notes I have made may perhaps be of sufficient interest for publication:—

*Eremocoris podagricus*, Fabr.: additional British localities.—Since the clearing up of the confusion which formerly existed in the synonymy of our species of the Lygeid genus, *Eremocoris*, *E. podagricus* has rested as British solely upon the specimens (about thirty) taken by the late Dr. Power in April, 1864, at Littleington, Cambridgeshire, under dead leaves at the bottom of a hedge. Since 1899, however, I have met with several examples of this pretty species in Surrey, on the downs near Dorking and Croydon, and the specimens now in my collection agree with the insects standing under the name *podagricus* in the Power Collection. In the Croydon locality it occurs in company with *E. fenestratus*, from which it is easily distinguishable by its brighter colouring and different pattern of markings; *fenestratus*, even in life, has a faded, "greasy" appearance, while *podagricus* has a "velvety" facies, rather like that of a *Scolopostethus*. I find these insects principally amongst stones and dead leaves under bushes, especially junipers, on chalky slopes, but I once took a pair of *E. podagricus* running in the sun on a road.\*

*Drymus pilipes*, Fieb.—I found two specimens of this apparently scarce species amongst dead leaves, near Croydon, on September 10th, 1901, for the determination of which I am indebted to Mr. Saunders. Although Douglas and Scott in their "British Hemiptera" record two specimens as having been taken by Dr. Power at

\* The specimens recorded by Mr. Saunders, on my authority, from Caterham and Chatham, are referable to *E. podagricus*, and not to *E. fenestratus*.—G. C. C.

Mickleham, the species is unrepresented in his collection at South Kensington. There are, however, two small specimens of a *Drymus*, labelled "Mickleham," in the collection, standing under *D. pilicornis*, Muls.

*Monanthia ciliata*, Fieb.—Douglas and Scott (quoting Fieber), give, as food-plants of *Monanthia reticulata*, H.-S. (*ciliata*, Fieb.), *Verbascum* and *Senecio jacobææ*. Puton, however (Hém. Hét. de France, I, page 113) says: "en mai dans les fleurs de l'*Ajuga reptans*." My own observations would confirm the latter statement, as on August 5th, 1900, at Box Hill, I discovered a rather large colony of it in a place where a few plants of *Ajuga reptans* (common bugle) were growing amongst wood-sage and ground-ivy. A few were actually on the *Ajuga*, but the majority were amongst thick moss at the roots of the various plants; one of the ground-ivy plants appeared to me to have also been attacked by the *Monanthia*. This colony has since, from some cause, unfortunately disappeared.

*Calocoris chenopodii*, Fall.—An individual of this Capsid, which was placed in a box with a specimen of the Homopteron, *Evacanthus interruptus*, during a visit to Box Hill in August, 1900, was found on arrival home with its rostrum fixed in the body of the latter, which it sucked completely dry. I watched it for some time and saw it withdraw the rostrum and "try" other parts of the Homopteron in a manner highly suggestive of its being used to the business. This observation is, I think, of some interest in connection with that of Mr. J. W. Douglas, who in this Magazine for 1895, p. 238, recorded having found *Capsus lanarius* feeding on *Aphides* in his garden at Lewisham. The members of this family had been previously supposed to feed exclusively on vegetable juices.

*Pseudophloxus Fallénii*, Schill.—A ♀ of *P. Fallénii*, boxed at Deal on August 18th, 1900, laid ten eggs in the box; these were oblong in shape, whitish, semi-transparent, about 1 mm. long, and (under a pocket lens) smooth.

Teratological specimens.—Amongst several abnormal specimens I have come across I may mention one of *Zicrona cærulea*, which has the left posterior leg much shortened, each joint, however, being relatively of the same length in proportion to the others, as though the leg were of the normal length; also one of *Gnathoconus albomarginatus*, in which one of the legs is in the larval condition, the insect being otherwise mature.—F. B. JENNINGS, 152, Silver Street, Upper Edmonton, N.: January 28th, 1903.

*Notes on Clunio marinus*, Halid.—In the Ent. Mo. Mag. for 1894, pp. 129 and 164, are notices of this very interesting marine Chironomid by Mr. G. H. Carpenter, who met with it in April of that year on the shore of Killiney Bay, Co. Dublin. He describes the female and larva, which had been previously unknown, and mentions the former occurrences of this species in Ireland and England as far as then known, and adds, "it would be interesting to ascertain its range around our shores." Only one certain occurrence in England is mentioned. "It was observed skimming over the surface of rock pools at Hastings, in April, 1872, by Mr. C. W. Dale," as recorded in Vol. xx, p. 214, of this Magazine. I can now add an earlier notice than this, since it is given in Mrs. Merrifield's Natural History of Brighton as occurring on the coast in the Brighton district. This was certainly previous to 1859, the date of Mrs. Merrifield's book, and was doubtless on the authority of Mr. Unwin, of Lewes, who took much interest in the *Diptera*, and furnished most of the lists of insects. I

have seen no notice of this species since 1894, but a few weeks ago I received specimens from Mr. Luff, of Guernsey, who observed it in swarms over pools among the rocks at low tide, in August, both in Guernsey and Jersey. This is of interest, not only by giving two fresh localities, but as showing that this insect appears in the perfect state, both in early spring and in summer.

P.S.—Since writing the above notice my attention has been directed to some interesting notes on this species by Mr. A. D. Imms, in the "Entomologist" for June last, pp. 157-158; to these he has added a very complete bibliography of the genus, and an account of the discovery by himself of the insect at Port Erin, Isle of Man, in June, 1901; any one interested would do well to refer to his paper.—E. N. BLOOMFIELD, Guestling: *January 16th, 1903.*

## Obituary.

*Johannes Faust* died at Pirna, near Dresden, from inflammation of the lungs, on January 18th, 1903. He was born at Stettin, Germany, on February 12th, 1822, and was the eldest son of a cartwright. He studied theoretical engineering at Berlin, and practical engineering at Stettin, and was at first installed by the Vulcan Society of Actionaries at Stettin. Later (about 1862) he went to Russia as a civil engineer, and while staying at Samara, a place far removed from all civilization, he began to observe and collect insects. In 1870 we find him at St. Petersburg, where he acquired the collection of Prof. Eversmann, and joined the Russian Entomological Society. In the summer of 1872 he went on a collecting expedition for several months with the Lepidopterist Christoph to Baku, Derbent, and the mountains of Daghestan. In 1873 he returned to St. Petersburg, but owing to business engagements he constantly had to change his abode: thus in 1874 we find him at Wiborg, in 1878 at Helsingfors, in 1880 at Bobruisk (Minsk), in 1881 at Sarkenhausen (Kurland), and in 1884 at Liban (Kurland). This unsettled course of life induced him to restrict his collection of *Coleoptera* to the *Curculionidæ*. His first papers contain articles on various families of *Coleoptera* (Horæ Soc. Ent. Ross., viii, ix, Bull. Soc. Nat. Mose., viii), and on *Tenebrionidæ* (Horæ Soc. Ent. Ross., xi, pp. 163-252), in which he was assisted by Prof. Mäklin of Helsingfors. Later, Faust worked only at the *Curculionidæ*, of which he amassed a collection of more than 13,000 species,\* represented by at least 36,000 specimens, including more than 2000 species described by himself, in about 130 different papers, published in the Horæ Soc. Ent. Ross., Ent. Zeit., Bull. Soc. Nat. Mose., Deutsche Ent. Zeitschr., Rev. Mens. d'Ent. par Dokhtouroff, Ent. Nachrichten, Wien. Ent. Zeit., Öfvers. Finska Vetensk. Förhandl., Ann. Soc. Ent. Belg., and Ann. Mus. Genova. The collection, which is most carefully arranged and labelled with localities, collectors' names, &c., was purchased in 1900 by the Royal Zoological Museum of Dresden (which also possesses Kirsch's collection), and this induced Faust to settle in 1901 at Pirna, near Dresden, so that he could work further at it, and finish a Monograph of the *Cleonidæ* he had in hand. Faust was an entomologist of great activity and perseverance, a scrupulous scientific worker, an excellent correspondent, and a most amiable man. He was an Honorary Member of the German, Russian,

\* The number of described species is now fully 20,000, exclusive of *Brenthidæ* and *Anthrribidæ*.  
—G. C. C.

and Belgian Entomological Societies. Dr. J. M. Heller, of the Dresden Museum, has been kind enough to furnish the above particulars, and having recently had occasion to study a good deal of Faust's work on *Curculionidae*, I can fully endorse the above statement as to the quality of his work.—G. C. C.

## Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *January 19th, 1903.*—Mr. G. T. BETHUNE-BAKER, Vice-President, in the Chair.

Messrs. G. T. Bethune-Baker, R. C. Bradley, and C. J. Wainwright showed *Ematurga atomaria*, L., for comparison. Mr. Bethune-Baker, the long series from Corwen shown before (Nov. 19th) which, in comparison with Midland specimens shown by Messrs. Bradley and Wainwright, were all decidedly pale. Also series from many other localities, including females from Buda Pesth, and Ramnoch, Perth, which approached the males in color and markings very closely. Mr. Wainwright's Midland specimens from Wyre Forest, Cannock Chase and Sutton Park were all dark, and amongst Mr. Bradley's Sutton specimens was a male, the markings of which were almost black. Mr. Wainwright also showed a specimen of *Machaira serriventris*, Rond., bred by Dr. T. A. Chapman from *Tanessa polychloros*, L., from Locarno, the antennae of which were strikingly abnormal. They appeared fully developed, but were less than half the usual length, the third joint being small and roundish oval, and the general size suggesting a *Trixa* rather than a *Phorocera*. Mr. R. C. Bradley showed *Eumerus sabulonum*, Flin., ♂ and ♀, from Barmouth, June and July, 1902; also *Gastrophilus equi*, F., from Arthog, near Barmouth, August 4th and 5th, 1902.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: Annual Meeting, *January 19th*, when, in the unavoidable absence of the President, Mr. S. J. Copper, F.E.S., Dr. J. W. Ellis presided over a large attendance of Members.

Mr. J. Kidson Taylor, of Buxton, was unanimously elected a Member of the Society.

Valuable donations to the Library were announced by the Secretary from Dr. J. Fletcher, LL.D., F.R.C.S., F.L.S., Dominion Entomologist to the Canadian Government, Mr. F. N. Pierce, F.E.S., Mr. J. Roland Charney, F.Z.S., F.E.S., and the Council of the City of London Entomological and Natural History Society. Communications were also read from Mr. M. P. Wytman (Brussels) and Messrs. Charney and Heathcote (Aston), the former of whom would esteem it a favour on the part of Entomologists who are in possession of the Large Copper Butterfly (*C. dispar*) if they would kindly communicate with him forthwith. The following Officers were elected to serve during 1903. President, Mr. S. J. Copper, F.E.S.; Vice-Presidents, Messrs. W. Webster, F.R.S.A.I., R. Tuit, Jun., and F. C. Thompson; Hon. Treasurer, Dr. J. Cotton, F.E.S.; Hon. Secretaries, Messrs. E. J. B. Sopp, F. R. Met, S., F. Birch and H. Tonkin; Hon. Librarian, Mr. R. Wilding; Council, Dr. G. W. Chaster, Messrs. J. R. le B. Tomlin, F.E.S., F. N. Pierce, F.E.S., John Lea, W. A. Tyerman, W. D. Harrison and A. Tippins. An interesting address was then delivered by Mr. R. Newstead, A.L.S., F.E.S.,



Hon. F.R.H.S., on the life history of the following species of *Coccidæ*: *Eriopeltis festuæ*, *Lichtensia viburni*, *Finsonia stellifera*, *Pseudococcus ulicis*, and also some important observations on the male of *Lecanium hesperidum*, which he has discovered undergoes a complete metamorphosis, as in the males of other species of the *Coccidæ*. Mr. Newstead also dealt with the formation of the curious test of waxy covering in *Ceroplastes*, and some important observations on the secretion of honeydew in *Pulvinaria vitis*, var. *ribesiæ*, a full account of which will appear in the second Volume of his work on the *Coccidæ* of the British Isles, shortly to be published by the Ray Society. A hearty vote of thanks having been accorded the lecturer, the following exhibits were examined: A pair of *Chrysophanus dispar* from Yaxley (1848) forming a portion of probably the last catch of the Large Copper in Britain, and a beautiful series of *Lycæna Arion* from S. Devon in 1902, by Mr. J. R. Charuley, who also exhibited on behalf of Mr. T. Dewhurst, most excellent slides of *Cerura vinula* and *Pieris rapæ*. The genus *Oporabia*, showing hybrid forms between *O. filigrammaria* and *O. autumnaria* by Mr. Pierce. Nymphs and imagines of the exotic earwig, *Chelisoches morio* from Sandakan and the Dammar Islands by Mr. Sopp. *Lycæna Acis* by Mr. Collins, series of *Erebia blandina*, &c., by Mr. Prince, and an almost black *Abraaxa grossulariata*, by Mr. A. Tippins.

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THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY,  
December 11th, 1902.—Mr. F. NOAD CLARK, President, in the Chair.

Mr. Cowham, of Stoke Newington, was elected a Member.

Mr. South exhibited for Mr. Arkle of Chester (1) *Ematurga atomaria*, ♀, having the ground colour unusually white, and the markings much intensified, with a wide submarginal band on all four wings; (2) *Canonympha typhon* from Westmoreland, a series varying from one with only a trace of ocelli to one with a complete series of well-developed ocelli on the upper-side, and a series with a varying amount of white on the under-side, one specimen with streaks of white giving a foliated appearance to the dusky area; (3) a melanic example of *Cymatophora duplaris*; (4) *Thera variata*, having the central band nearly black, and the rest of the wing of a light brown; (5) a melanic *Agrotis exclamationis*. Mr. Ashdown, specimens of the Homopteron, *Ledra aurita*, taken at Mickleham, together with larvæ from the New Forest. Mr. Turner recorded the species from Chattenden Woods, and Mr. West from West Wickham. Mr. R. Adkin, a specimen of *Euchloë cardamines*, having the discoidal spot reduced to a mere speck. Mr. Goulton, an example of *Catocala nupta* from Balham, showing a general darkening in colour. Dr. Chapman, cocoons of *Nudaria murina* and *Euchromia Lethe*, showing the larval hairs similarly made use of, but with different effects, owing to the cocoon in one case being slight, while in the other it was dense, and the hairs in the former few and long, while in the latter species they were short and abundant. Mr. Turner, a pair of a large spider from Trinidad, together with a species of *Automeris* from the same place. Mr. Kirkaldy gave an account of a tour he had recently made in Italy and Switzerland, illustrating his remarks with a large number of photographs.—



*January 8th, 1903.*—The President in the Chair.

Mr. Oldaker, of Dorking; Mr. Spitzly, of Canonbury; Mr. Priske, of Acton; Mr. Pratt, of Richmond; and Mr. Goulton, of Balham; were elected Members.

Mr. Goulton exhibited an extreme form of the light coloured Folkestone race of *Ematurga atomaria*. Mr. Chittenden, a short series of *Ephyra pendularia*, including very fine examples of the rosy form, v. *subroseata*, from Staffordshire, very pale examples from Chislehurst, and light banded forms from Ashford. Mr. Lucas, on behalf of Mr. Kemp, an aberration of *Enallagma cyathigerum*, with one stigma missing. Mr. Kemp, his collection of the genus *Donacia*, comprising sixteen species, and called particular attention to the great variation shown by *D. discolor*, and pointed out the empty cocoon, which clearly showed the small perforation, which communicates with the intercellular air spaces of the root to which it is attached. Mr. Kaye, examples of *Amorpha austanti* and *Smerinthus atlanticus* from N. Africa, together with the exceedingly rare hybrid, *metis*, the produce of *A. austanti* ♂ and *S. atlanticus* ♀. He also showed the hyb. *hybridus*, the produce of *S. ocellatus* ♂ and *A. populi* ♀. Mr. Adkin read the Report of the Field Meeting held at Otford, Kent, on June 21st, 1902. Mr. Step read the Report of the Field Meeting held at Byfleet, on July 19th, 1902. A large number of slides were exhibited by Messrs. Step, Lucas, Dennis, Longe, Cant, Kaye and Clarke, comprising illustrations of Protective Resemblance in Insects, studies of wild flowers, flowering and fruiting habits of our more common trees, ova of *Lepidoptera*, and special collecting spots. Mr. Kaye's slides were from photographs taken during his tour in British Guiana.

Annual Meeting, *January 22nd, 1903.*—The President in the Chair.

The early part of the Meeting was devoted to receiving the Report of the Council and Officers for the past year, the election of Officers and Council for the coming year, and the reading of the President's Address. The following is a list of Officers and Council elected for the Session 1903-4. President, E. Step, F.L.S.; Vice-Presidents, F. Noad Clark and J. H. Carpenter, F.E.S.; Treasurer, T. W. Hall, F.E.S.; Hon. Curator, W. West; Hon. Librarian, H. A. Sanz ; Hon. Secretaries, S. Edwards, F.L.S. and H. J. Turner, F.E.S.; Council, R. Adkin, F.E.S., T. A. Chapman, M.D., F.Z.S., H. S. Fremlin, F.E.S., A. Harrison, F.L.S., G. W. Kirkaldy, F.E.S., W. J. Lucas, B.A., and H. Main, B.Sc.

Mr. Hy. J. Turner exhibited specimens of *Sympetrum sanguineum* from the Black Pond, Esher, and from Staples Pond, Loughton, both being new localities. He also showed *Papilio macrosilaus* and *P. philolaus* from S. America.—HY. J. TURNER, Hon. Sec.

ENTOMOLOGICAL SOCIETY OF LONDON: *December 3rd, 1902.*—The Rev. Canon FOWLER, M.A., D.Sc., F.L.S., President, in the Chair.

Mr. Philip J. Barraud, Bushey Heath, Herts; Mr. William E. Butler, Hayling House, Oxford Road, Reading; and Dr. Malcolm Cameron, R.N., H.M.S. *Harrier*, Mediterranean Station; were elected Fellows of the Society.

Mr. H. W. Andrews exhibited a male specimen of *Theriptectes luridus*, from Chattenden, July, 1902. Females of this species were taken by Colonel Yerbury at Nethy Bridge, N.B., in 1900, but there appears to be no record of the capture of

the male. He also exhibited a male *Platychirus sticticus*, and a female *Microdon devius* from Eltham and Shoreham (Kent) respectively, and three small dark examples of *Syrphus balteatus*, taken near Brockenhurst, where the form was not uncommon, in October, 1902. Mr. M. Burr, two species of *Phyllium* from Ceylon, sent by Mr. Green, *P. bioculatum*, Gray (= *erurifolium*, Hann., and *scythe*, Gray), and *P. athangus*, Westw. Mr. A. J. Chitty, a box of insects, taken between September 22nd and October 7th last, from a decayed fence or hedge made of different kinds of wood, with the bark left on. The uprights of the hedge were chiefly of birch. The exhibit comprised about a hundred species, of which seventy-nine or eighty were *Coleoptera*. Four species of beetles, viz.: two species of *Pogonocherus*, the scarce *Macrocephalus albinus*, and the extremely rare *Tropideres niveirostris* mimicked the surroundings of lichen-covered bark, and one, *Acalles turbatus*, resembled buds. Of the rest, there were five species of *Dromius*, *Anisoxyna fuscata*, Ill., *Orchesia minor*, *Clinocara tetramera*, Thoms., and *Tetratoma ancora*. A discussion followed, in which the President, Professor Poulton, and others took part. Mr. R. Adkin, a hybrid *Selenia bilunaria* × *S. tetralunaria*, together with spring and summer examples of both species for comparison. The hybrid presented some of the markings of each of its parents, the crescentic blotch at the apex of the fore-wings, and the band on the hind-wings closely following *tetralunaria*, but no trace of the dark spot usually so distinct on each of the wings of that species, especially in the summer emergence, was visible, while the "second line" of the fore-wings closely followed *bilunaria*. In colour it more nearly resembled that of the summer brood of *tetralunaria*.—II. ROWLAND-BROWN, *Hon. Sec.*

69th Annual Meeting, *January 21st*, 1903.—The President in the Chair.

After an abstract of the Treasurer's accounts, showing a satisfactory balance in the Society's favour, had been read by Mr. A. H. Jones, one of the Auditors, Mr. H. Goss, one of the Secretaries, read the Report of the Council. It was then announced that the following had been elected Officers and Council for the Session 1903—1904. President, Professor Edward B. Poulton, M.A., D.Sc., F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and Mr. Henry Rowland-Brown, M.A.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of Council, Colonel Charles T. Bingham, F.Z.S., Mr. Malcolm Burr, B.A., F.L.S., Dr. Thomas A. Chapman, F.Z.S., Mr. Arthur John Chitty, M.A., Mr. Hamilton H. C. J. Druce, F.Z.S., The Rev. Canon Fowler, M.A., D.Sc., F.L.S., Professor Raphael Meldola, F.R.S., Professor Louis Compton Miall, F.R.S., the Rev. Francis D. Morice, M.A., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, M.A., F.L.S., and Colonel John W. Yerbury, R.A. It was announced that Professor Poulton, the new President, would appoint the Rev. Canon Fowler, Professor Meldola, F.R.S., and Dr. D. Sharp, F.R.S., as Vice-Presidents for the Session 1903—4. Canon Fowler, the retiring President, delivered an Address. A vote of thanks to the President for his Address, and for his services during the past year, was proposed by Professor Poulton, seconded by Professor Meldola, and carried. The President replied. A vote of thanks to the Officers was proposed by Professor Meldola, seconded by Mr. C. O. Waterhouse, and carried. Mr. McLachlan, Mr. Goss, and Mr. Rowland-Brown replied.—H. Goss, *Hon. Secretary*.

## FURTHER NOTES ON SOUTH AFRICAN LEPIDOPTERA.

BY FRANCES BARRETT; EDITED BY C. G. BARRETT, F.E.S.

(Continued from page 38).

*Glottula (Brithys) panceratii*, Cyr.—“This species, of which I send a painting of the larva, has caused me some trouble and research. A long time ago Mrs. G. sent me a few larvæ from Umtata. I took this sketch, and afterwards they all died, so I have been looking ever since for others. Going over to Umtata, a lady told me, with grief, that she had been obliged to cut back all her red lilies, for that the horrid caterpillars were eating them all away, and she could not get rid of the latter in any other way. Going to look at the remains, and roots, we found that the offender was the larva that I wanted. From these larvæ the moths are now (March 18th) emerging. They pass through their changes very quickly; and some of the chrysalides change upon the surface of the earth without any attempt at a cocoon. The moth must fly only at night, for it is very sluggish by day. I have never seen it feeding at flowers, and rarely attracted by light—though one or two have certainly come to this attraction in July. I have now found larvæ at home, which are still feeding. The food-plant is scarlet Natal lily, but there is another bulbous plant that they like (*Amaryllis* ?), it has wider leaves, and a curious tripled bloom, very large and heavy, and of a flaming orange and green; growing in damp hollows and near the streams.”

[The larva is figured as moderately plump, smooth, with segments rather well divided; head orange-red; legs and prolegs of the same colour, tipped with black; body pale yellow, with a broad black band across every segment, the intermediate spaces somewhat latticed with grey-black, and the segmental divisions tinged with orange-red.]

*Sphingomorpha chlorea*, Cram., *Monteironis*, Butl.—“I have had such a find to-night (June 17th). Going out late to cut *mimosa* for my prisoners I found a very pretty green caterpillar, which I wanted, for those already in hand had hastened to spin up before I could paint one properly. Going out again later I found half a dozen good sized ones, also some small, and a few quite tiny—not less than a dozen altogether. I found these by searching the tips of the *mimosa* branches, they were eating the young tender leaves. It is useless to search for them in the day unless everything is moist after a rain, and I cannot tell where they hide. This larva is a double looper in its manner of walking; indeed, it has a snaky walk and a wriggle; it has a lovely crimson band which shows only when it loops, also white regular markings on a green ground, but no hairs; its first pair of prolegs is not so clearly defined as the rest.”

February 19th.—“You will remember my telling you of one night when I found a number of beautiful green and white caterpillars with a red band, feeding on the young tips of *mimosa*, and was beguiled into staying out very late collecting a lot of them. Some that I found then were very small, letting themselves down by a thread when the light appeared; these were not so brilliantly coloured as the large ones, and very speedily most of them turned brown. I did not know whether this change of colour was caused by captivity, but very soon Arthur called my attention

to some dark ones that they had found out of doors. He and Harry brought home a piece of bark having two so hidden in it that I had to look very closely before I could discover anything. The boys were picking the gum which flows from any crack in the *mimosa* trunk when one of the caterpillars moved; afterwards they searched and found a good many more. These were like those of mine which had turned brown. After this Arthur took me across to the other garden to see a pet colony of his at the top of a stump of *mimosa*, which had been lopped off. Here were nearly a dozen in the chinks that the axe had left, and among them one fine green one. By the traces of dirt I judge that they go away to feed at night, but return to the same place for the day, and that they had pretty well grown up there. When the first moth came out I was much disgusted to find that I had been treasuring and feeding up such an enemy, and was much inclined to throw the rest away. However, their ways were curious, so I tried dividing the green from the brown; but this was of little use, for if I went to the "green" box some would have gone into cocoon, but others turned brown, though I never noticed that any turned green again. One day the boys brought in a bit of log about a foot long, which they had chopped off a limb of a tree in the garden, and asked how many caterpillars I could find on it. At first I could see none, but at last we discovered eight."

[The slight description quoted above scarcely gives a sufficient idea of the beautiful and singular appearance of this fine larva. The figures, of which half a dozen are before me, show sizes varying from  $2\frac{1}{2}$  to nearly 3 inches in both green and brown forms. The ground colour of one form is wholly green—bright pea-green—head, body, and prolegs, but the body variegated with numerous irregular, transverse, white blotches, bands or bars, an interrupted white spiracular stripe, and white edging to the rounded face. When at rest it is tolerably plump, but when in motion much extended and more slender; the fourth, fifth, and sixth segments rather humped on the back, and between the fourth and fifth a wide opening, in which is a broad, brilliant, crimson patch, edged below with black; the legs also sometimes tinged with the same brilliant crimson. In the other variety the head is dark brown, with a whitish border to the face; the body umbreous, with paler shades on every segment, and a brownish-white band above the legs following every undulation of the segments throughout; legs and feet pale brown; the opening between the fourth and fifth segments either crimson or rich orange; sometimes a similar orange opening between the fifth and sixth segments; anal prolegs much extended. It should be distinctly noticed that the crimson dorsal blotch or blotches are entirely covered and concealed when the larva is contracted at rest, and are at all times hidden, or visible in any degree, at the will of the larva, and when the cleft or opening is fully extended, that between the fourth and fifth segments is quite one-half the breadth of one of the segments. It appears to spin up among *débris* on the ground, but the pupæ sent are in slight silken cocoons among the bits of *mimosa* on which the larvæ had fed, a very neat close-fitting chamber being made with the least possible expenditure of silk. The pupa rather elongated, dull purplish-brown or liver-colour, the wing- and limb-covers frosted with the most minute and thickly set sculpture of fine dotting, the segments more coarsely covered with small pimple-like points, which cause the whole surface to be dull; cremaster hardly distinguishable from the anal segment. Those who have been interested in earlier



notes will at once recognise this as the "larger fruit-moth." Setting aside its destructive propensity as regards fruit, it is a creature of unusual interest, from the wonderful development of tufts of long yellowish hair-scales on its legs.]

*Prodenia littoralis*, Bdv.—"Larvæ were found feeding in the hot sunshine on blossoms of prickly pear. They were fat and sluggish, and readily dropped off, unless, as frequently happened, they had eaten right into the heart of the fleshy calyx. To obtain food for my captives I was obliged to slash off the flowers with a knife, and pick them up with the point. These prickly pears sometimes ripen in a period of great scarcity, and the native people pick them up for food, carrying them away in bags on their heads. I have had women come with bad thorns, from them, in their hands or feet, which required to be poulticed. I have also found this larva in the garden feeding greedily upon cabbage."

[The larvæ figured are plump and fleshy, a little thickest behind; head grey or pale ochreous; dorsal region of the body down to the spiracles slate-grey, with a yellowish-white dorsal line, and on each side of this a row of thick deep black triangles or V-marks, which are conspicuous; spiracular line and under-surface yellowish-white; legs similar, but tipped with grey.]

*Ophiodes xyliua*, Distant.—October.—"This brown beauty I caught one night down by the stepping-stones, on which I had just crossed the river, lantern in one hand, killing bottle and net filling the other; this moth floated up in the darkness and wandered aimlessly up the steep bank, between the bushes, when I made a dash and secured it—*without* breaking the bottle. On Christmas Day Harry persuaded me that it was a holiday, and got me to go down to the river, where he was paddling about. Presently he stopped, landed at the other side, climbed a tree which overhung the river, and brought me an old nest. In it was reposing a fine large half-looping caterpillar of an even pale brown colour, without distinct markings. I fed it on *Induba*, the river tree, but in a day or two it vanished. I examined the nest, but could find nothing, so left it in the box, and concluded that the caterpillar had escaped. A short time afterwards, I found this beautiful moth in the box, and looking more closely, saw that in emerging it had forced into view the cocoon, which had been made in the bottom of the nest. Another larva was found by a friend, also on an *Induba* tree by the river side. It was smooth and slender, pale earthy brown, with a small hump on the back about half way along: but the most noticeable thing about it was a clear, pearly-white stripe along the under-surface of the body, in which were two lovely crimson spots between the first two pairs of prolegs, and two dark spots, nearly black, between the other two pairs. We went down and searched the tree for more, but without success. This one spun up at once, and was little more than a month before emerging.

[This fine *Noctua*, of which but little is known, is 2 to 2½ inches in expanse of wings, thorax and fore-wings reddish-brown or pale umbreous, the reniform stigma darker, well formed, and edged with black; the orbicular indicated by a round black dot; first line very indistinct; second touching it on the dorsal margin, but sweeping off very obliquely three-fourths across the wing and then curving back to the costa; subterminal line displaced and irregular, composed of black dots, which as they approach the apex of the wing, become intensified into black clouded spots. Hind-wings golden-brown at the base, broadly smoky-brown behind; cilia reddish-brown.]



*Tæniopyga sylvana*, Walk.—“I have been watching the plants (yellow snowdrops) where we found the larvæ last year, while they were in bloom, but could find none. Now that the snowdrops are fully in seed I went out after a rain, and found a lot of larvæ. The young ones clustered in and on the seed-pods, feeding in many cases on those which are already brown and ripe, and in full daylight. The question as to these now is—Do they come from the seed-pod, eating their way out? since in most cases there is a big round hole in the side of the capsule, while the top is closed; or do they eat their way *in* to get at the seeds? I found numbers on one plant growing among a lot of plants which have no indication of the presence of larvæ, and in no case upon a plant devoid of seed-pods, yet I know that the well-grown larva eats the leaves. I have not captured any of the moths, though the plants grow near to the house. Probably they are on the wing only at night, and avoid lights. The larvæ in confinement are most troublesome in gnawing their way out of any vessel when they want to pupate. The chrysalis state is passed in an earthen cocoon underground. The moths are erratic in emerging, all will seem to have appeared, and then, weeks later, there will be another.”

*Myrina ficedula*, Trimen.—“One rainy afternoon, I noticed that something had been eating the young juicy tips of an evergreen tree that grows in the garden, close to the veranda; indeed, I took hold of a caterpillar without knowing it, for it looks quite like a continuation of the twig. It is of ordinary form, yet walks like a slug, and one can hardly see the legs. It feeds in broad daylight, but eats best on a moist, cloudy day. This proves to be the larva of that lovely, long-tailed blue butterfly. The chrysalis is placed exposed on a leaf or a stem. The butterfly loves to fly high up among the shrubs, and will sometimes settle on the balcony rail. It is very fond of the flowers of the plumbago.”

[The “evergreen tree” seems to be a species of *Ficus*.]

*Junonia cloantha*, Cramer.—“I found the larva in a little quarry, on a low-growing plant, which bears a purple flower. Fortunately I sketched it on the same day, for on the morrow it had spun up. It was only in the chrysalis state about three weeks, and such a pretty chrysalis, I could not do it justice. The butterfly comes to fallen fruit.”

[The larva is sufficiently pretty!; somewhat plump and thickest in the middle; head orange-yellow, with a cross row of black dots, and a pair of short, black, knobbed antenna-like projections; body primrose-yellow, with an indented broad black band on each segment; anal plate orange-yellow; feet, and also the rather short hairs, black. Pupa having a considerable swelling or hump at the back of the thorax, three projecting points in front, having at their tips glossy black dots; beneath them similar black dots; general surface delicate yellow-green, with numerous short purple streaks and dashes on the under-side.]

*Junonia Sesamus*, Trimen.—“The dark blue and brown butterflies are our ‘winter robins’—so tame, that it seems a sin to kill them. If these are what you mean as only a variation in colour from the bright red-brown ones which come to the fruit (*J. Octavia*) it is very extraordinary! Their habits are not at all alike! The red ones fly wildly over the veldt, and rarely come near the house! The blue ones shelter in a sluit, if they cannot find a balcony or a lofty room!”

[That the "red" and "blue" forms are seasonal varieties of one species seems to be proved by the occurrence (rarely) of intermediate specimens, partaking of both colours, and also by rearing.]

*Hesperia keitloa*, Wallgr.—"There is a rather large dark brown insect, with white markings, which Arthur caught round the apricot blossoms near sunset, here at Buntingville. We want to know which it is—a moth or a butterfly?"

Later—"Those brown and white skippers which were so numerous last year are very nimble if you try to catch them; otherwise they fly about very contentedly settling on the Zinnia blossoms or examining the trees in a contemplative manner, especially as the season wears on. I have found them at night sleeping on one of the shrubby bushes."

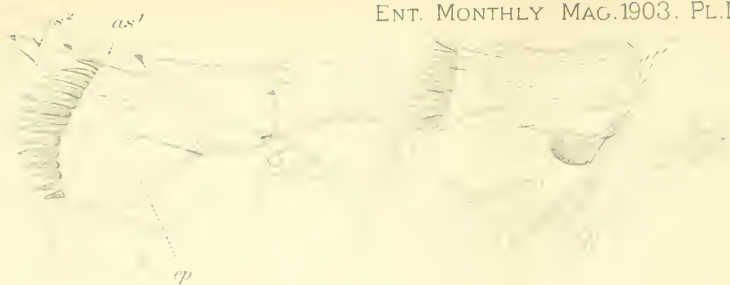
[This noble "skipper" butterfly, over two inches in expanse of wings, has the fore-wings dull brown, without markings; the hind bordered with the same colour, but in the male the middle and basal portions are shaded off to yellow, in the female to orange-red, and both have the cilia of the portion near the anal angle orange-red. The white markings spoken of are upon the male only—a very broad pure white band across the *under-side* of the hind-wings, the basal and hinder portions of these wings being deep rich brown; in the female there is no trace of this white band, but there are rich orange blotches and large black spots toward the anal angle; in both sexes the fore-wings are plain brown on the under-side. The larva, which my sister has found commonly upon Acacia, and of which she has reared a good many, figures thus—Plumply rounded, but the second and third segments more slender, and forming a sort of thick neck; the head decidedly broader, orange-yellow, with a row of black dots across the face; body pale green, each segment ornamented with a divided or double black band, and between these some reddish wrinkles; legs and prolegs green. She reports as follows.]

"The larva wraps itself up in a leaf of white Acacia; when quite young it is often sewn up in a single leaflet, frequently at the tip; it feeds in this till large enough to go about; then it makes a shelter of a larger leaf, at last sewing, or rather webbing, up two or even three leaves together, and remaining inside during the day. I believe that it uses this as a habitation, going and returning, but of this I have not been able to make quite sure; the larger abode is not visibly perforated."

[A pen and ink sketch shows two leaflets drawn together and sewn edge to edge, so as to make a complete chamber. The pupa is similarly wrapped in the Acacia leaf, and also is covered with a white powder; its delicate and nearly transparent pupa skin, as sent, probably bears little resemblance to its delicate colouring when alive. The butterfly has very fine hooked antennæ, and to these, it is doubtless indebted for its name—that of the two-horned Rhinoceros!].

*Smerinthus Grayi*, Walk.—"I noticed traces of larvæ, under a bush from which we were taking food for other species, so went to it night after night with a lantern, and collected four, all of which fed up. The larva is green, slightly marked with white on the sides, and with white and lilac along the middle of the back; one of them was clearly marked with lilac dorsal diamonds—or eight-sided spots, I am not quite sure which—and I regret that I was quite too busy to paint it. These larvæ had the usual hawk-moth horn."





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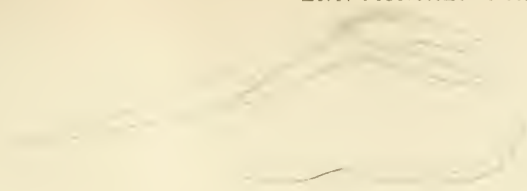


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11a.

11b.



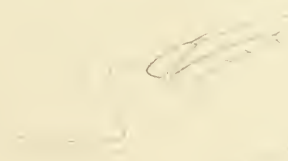
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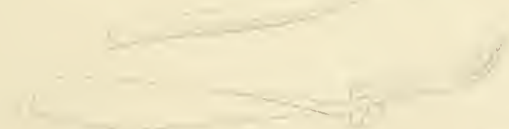
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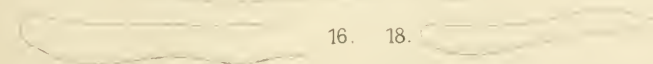


14a.

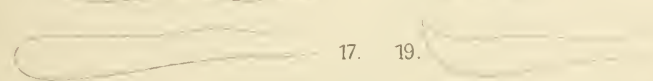
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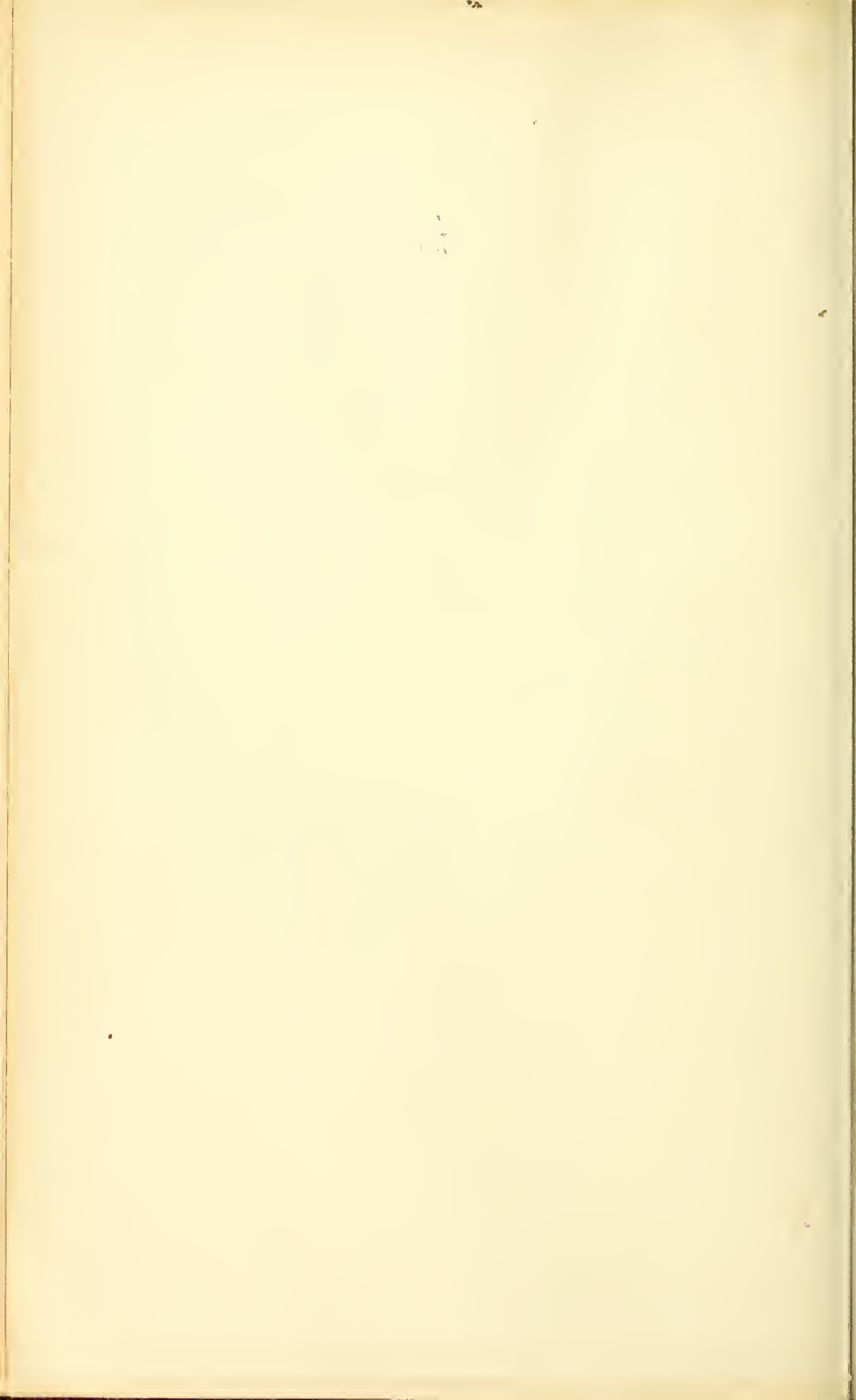


16. 18.



17. 19.





[The moth is very like the male *S. populi* in colour, but its fore-wings are rather more narrow and straight, and the two transverse lines very straight and oblique. There is no trace of the red patch on the hind-wings. The pupa very thick and robust, its surface shining, and with little sculpture except a band of pitting along the front margin of each segment; colour red-brown; cremaster very short and blunt, finished off with two short black points.]

*Nudaurelia menippe*, Felder.—“This one Harry spied hanging to a tuft of grass by the roadside, as he and his father were driving. Another was brought up by some children from near the river, and came to me dangling by the wings in the fingers of a little boy—reduced almost to a skeleton! I have a very interesting specimen come out, and I send a painting of the larva. The chrysalis is very much like that of *Gynanisa Maia*—smooth and black. You may judge how pleased I am to see this one appear. I have had the pupa over six months—probably eight. Larvæ were given to me at Umtata, but some of them were found at a farm further away. Their colour varies, they look fleshy and shining, and the little spikes look like polished black-lead. Food Black Wattle. The moth emerges in November, and I now find that the larger darker-coloured larvæ produce females. The chrysalides were partly buried, or in some cases simply lying upon the surface of the earth, with the cast skin just slipped off, close by.”

[This larva is something of a monster—four to five inches long, the segments plump and well divided; head rounded, chocolate-red, the mouth black, and a transverse black band across the top; body pale or dark chocolate-red, each segment furnished with a transverse row of thick thorn-like pointed black spikes; segmental divisions shaded with black; beneath the spiracles is an irregular longitudinal black stripe; legs black; prolegs chocolate-red, blotched with black. The pupa is large and very thick, its texture coarse and quite dull from minute and exceedingly thick granulated sculpture; segments even coarser than the rest, and sharply ridged at both front and hind margins, spiracles black and prominent; cremaster a thick conical black spike. In the ground, entirely without cocoon. The moth is a grand creature, over five inches in expanse; its antennæ black, broadly pectinated in the male; thorax rich orange-red, with a white bar across the collar; wings all paler red or terra-cotta, with the first and second lines white; and in the middle of each a large round blue-black spot, ringed with white and enclosing a hyaline space; hind uarginal area of all the wings dusted with black.]

*Lasiocampa Rennei*, Dewitz.—“The first larva was found up a tree over the river on Christmas day, and I afterwards found another by seeing a shed skin under a tree at the same place. The first fed up on *Induba* leaves, shed its skin several times, and buried. It was in the ground all the winter, and the moth emerged as you see (somewhat crippled). I gave it plenty of time to spread and dry its wings, and a twig to hang from, but it only huddled itself into a corner. The other larva was fed for months, but died after shedding a skin. I have since had two large ones brought in, but they would not feed, and died. I am sending a painting of the larva, but its hair does not look silky enough, it should be like the first hair of a baby. It seems only to be found singly. I think that it remains in the tree, and does not avoid the daylight—though I found one low down, under a tree, after rain. I have specially packed the cocoon, for the spines remain with you several days if you are not careful.”

[The larva, as figured, is a striking-looking—even ferocious-looking creature ; its head large, black, with two angulated white marks forming a sort of broken square on the face ; the papillæ yellowish-white ; at the back of the head, widely extended, loose tufts of long black hairs stand out on either side, the body blackish-umbreous, covered with similar long black hairs in loose tufts ; on the sides of the middle segments, large curved white blotches ; legs bright red, prolegs dull red. Cocoon, though formed in the earth, very woolly, the silk, which is rather loose, crowded with the broken hairs of the larva. The moth is a fine creature of over  $3\frac{1}{2}$  inches expanse of wings ; of the colour, and of somewhat the appearance of the female of *Lasiocampa quercus*, but having upon its fore-wings a subterminal line of black dots, followed by some black dusting.]

*Braura ligniclua*, Walk.—“The larvæ (see Ent. Mo. Mag., vol. xxxvii, p. 286) were very abundant last year, feeding on *mimosa*, but also found during the day clustered on a tree-trunk, or congregated under a limb, on the rough bark of the *mimosa* in stormy weather or after rain. Now (March) some more larvæ have been brought to me from Nggeleni, where they were feeding on Black Wattle, but they seem to be just the same. When the moths commenced to emerge I found thirteen males assembled in the window where the boxes are kept, and two large, heavy specimens (females) out, in one of the boxes. The window was open a little at the top and I do not think that any specimen had escaped from the boxes.”

[Clearly an instance of “assembling” by males.]

*Gonometa postica*, Walk.—“Of this large larva I send paintings ; you will see that these larvæ are *fringed*, some yellow, some white. Their food is Black Wattle. I had these from two places—Edward and Harry brought some which they found on a hedge in Umtata, and Budgie brought me others from Nggeleni. The size of the male moth is disappointing after the big larva and cocoon ; these are pretty when alive, with a sort of prismatic lustre on the wings, if one could only get them perfect. The largest cocoon was spun out of doors, in a tree, low down, and from it came the largest moth “like an owl” (the female). I have several more cocoons spun out of doors, for I visited that hedge in Umtata subsequently, after hearing from the proprietress “Tell Miss Barrett she is welcome to *all* the caterpillars—nasty things !” I must say, however, that she got a knife and helped me to cut the cocoons off with placid interest. I have marked the cocoons of some of those from yellow-fringed and white-fringed larvæ, to see what is produced by each, but they spun up late and the moths are not yet out—October 29th.

November 2nd.—This is from one of my marked cocoons. It was of the yellow-fringed larva ; you see it is the smaller moth with the prismatic colouring—the male. It is from a larva found at Nggeleni. A curious thing was told me by one of the native teachers about these cocoons. He saw them in my box, and said ‘Some years ago people came from the Great Place (*i. e.*, Chief’s Kraal) to hunt for these in the bushes. They would buy them, and made them into ornaments to wear’—necklaces I believe, or belts for the waist, against the skin, but for what reason remains a mystery—witchcraft probably. They would prick horribly, probably blister the skin, but when I pointed this out he only gave the native shrug of the shoulders, which dismisses the subject as an open question, yet a fact.”

[The prickly condition of these cocoons has been already remarked upon (vol.

xxxvi, p. 143), also the extraordinary disproportion in size and appearance between the male and female moths. The larva is between 4 and 5 inches long; excessively shaggy; black or brown-black, covered with tufts of similar hairs; along the sides are larger tufts of hair—yellow in the male, white in the female—and depressed so as to form long fringes; similar but shorter tufts projecting over the face, and much larger tufts, curved forward, on each side of the head.]

(To be continued)

## NEW SPECIES OF SIPHONAPTERA FROM EGYPT AND THE SOUDAN (WITH TWO PLATES).

BY THE HON. N. CHARLES ROTHSCHILD, M.A., F.L.S.

In the present paper six new species are named. The first five are all described from specimens taken in Egypt and the Soudan by the author and Mr. A. F. R. Wollaston in 1901. For the last-named species, *Pulex Witherbyi*, the author is indebted to Mr. Harry F. Witherby, who secured it from *Erinaceus albiventris* near Gebel Auli, in May, 1900. The author and Mr. Wollaston, however, subsequently found it near Shendi (see p. 87). The features of the present article are the first mention of the very curious developments of the male posterior segments in the new species of the genus *Pulex*, and also the first record of a comb-like organ appearing on the meta-thoracic epimera of a flea. Further references to the hosts from which these specimens were secured is given in "Novitates Zoologicæ vol. viii, pp. 397-401 (1901).

### 1. — CERATOPSYLLA ÆGYPTIUS, n. sp.

(Plate 1, Fig. 1).

The head is strongly rounded in front, the frontal outline (side-view) forming almost a semicircle. The ante-oral flaps are longer than in any other member of the genus that has come under our notice. The second flap being rather longer than half the vertical diameter of the head, measured from just in front of the antennal groove. The anterior portion of the head bears a series of short hairs parallel to the frontal outline. The more dorsal hairs of this row gradually increase in length and become more strongly chitinised, the last six being spine-like. Below these spine-like hairs are a few more of the same size. The genal process is very long and slender, being strongly chitinised. The post antennal portion of the head is densely covered with fine hairs on its dorsal surface. This portion also bears a row of hairs near the hinder edge, and one long hair towards the centre. The prothoracic comb consists of eighteen teeth. The mesonotum is clothed above with numerous hairs, and bears on each side two short spine-like projections. The metanotum is somewhat shorter than the mesonotum, appearing in side-view to be acuminate in shape, and bearing at the apex on each side a short spine. The

metathoracic epimeron is very characteristic. It is very large and pentagonal in shape, the posterior edge being the longest. This is somewhat rounded, and bears a series of fourteen strongly chitinated spines arranged in the form of a comb. They differ, however, from those of the prothorax in being genuine spines and not processes of the chitin. The first abdominal tergite is greatly reduced in size, presumably on account of the large development of the metathoracic epimeron. The first, second, third, and fourth tergites bear on each side one short spine\*. The seventh tergite bears on each side one long apical bristle and two very short hairs close to it. The sternites of segments three to seven bear four hairs on each side. The hairs of the fore coxa are rather stout. The first protarsal segment is nearly three times as long as it is broad. The length = 2.86 mm.

A single ♀ specimen of this very distinct species was secured near Cairo from an example of *Taphozous perforatus* on January 24th, 1901.

## 2.—*PULEX NUBICUS*, *n. sp.*

(Plate II, Figs. 10 and 16).

The palpus reaches to the end of the fore coxa. The hind femur bears two bristles beneath near the apex, a tooth towards the base, and a subventral row of hairs. The first segment of the mid tarsus is about two-thirds of the length of the second. The first segment of the hind tarsus is almost a third longer than the second segment, the long apical spine of this tarsal segment almost reaching to the end of the fifth, excluding the claw. The fourth hind tarsal segment is half as long again as it is broad. The two processes of the elasper are slender (fig. 10a). The ninth sternite of the male is narrow, curved, and somewhat lanceolate (fig. 10b). The plate of the penis is broad, its dorsal edge being straight, and the end obliquely rounded. The female closely resembles that sex of *cheopis*, but is smaller. It has, moreover, the same long spine to the second hind tarsal segment and the long rostrum so conspicuous in the male. The eighth abdominal sternite bears somewhat fewer and rather longer bristles than those of *cheopis*. The subventral row of bristles on the eighth sternite of this last-named species consists of more bristles, and is better defined than that of *nubicus*. The ventral angle of the hinder edge, moreover, does not project so far in the present species. The length = 1.86 mm.

Twenty-one ♂♂ and one ♀ of this species were secured near Shendi in February and March, 1901, from *Arvicanthus testicularis*, 4 specimens; *Gerbillus robustus*, 15 specimens; *Herpestes albicauda*, 1 specimen; *Genetta dongolana*, 2 specimens.

## 3.—*PULEX CLEOPATRÆ*, *n. sp.*

(Plate I, Figs. 4, 8; Plate II, Figs. 13, 17).

A very pale species, with long and slender bristles. The head is strongly rounded, the palpus not reaching to the end of the fore coxa. The abdominal

\* These spines probably represent vestigial combs, and are present to a greater or lesser degree in at least three other species of this genus: *Ceratopsylla unipunctata* (Taschb.), *C. dictactenus*, (Kol.), and *C. incerta*, Roths.



sternites of the male bear two hairs on each side, while those of the female have four. The seventh tergite in both sexes bears one long and two extremely short apical bristles. The hind femur has ventrally at its base a tooth, and in addition to this, an internal subventral row of three to five hairs along its entire length, with a solitary external subventral bristle before the apex. The first segment of the mid tarsus is three-fourths the length of the second. The first segment of the hind tarsus is the same length as the second, the long apical hair of this segment reaching to the base of the claw (fig. 4). The fourth segment, however, is more than twice as long as it is broad.

The three processes of the elasper of the male (fig. 13a) are very slender, bearing hairs only at the apex. The 9th sternite is broader than the processes of the elasper, and rounded at its end (fig. 13b). The plate of the penis is broad and rounded at the apex (fig. 13). The position and number of the hairs of the eighth tergite of the female can best be made out from the figure (fig. 8). The length = 1.42 mm.

A very large series of over a hundred specimens of this species were secured in February and March, 1901, near Shendi, the hosts being as follows:—*Gerbillus pygargus*, 75 specimens; *Gerbillus robustus* 11 specimens; *Lepus æthiopicus*, 16 specimens; *Dipodillus Watersi*, 2 specimens; *Dipus jaculus*, 1 specimen; *Erinaceus æthiopicus*, 1 specimen; *Arvicanthus testicularis*, 1 specimen.

#### 4.—*PULEX CHEOPIS*, *n. sp.*

(Plate I, Figs. 3, 9; Plate II, Figs. 12, 19).

This species is larger than *P. nubicus*, the palpus being shorter than the rostrum and not reaching to the end of the coxa. In the male, sternites three to seven inclusive bear four bristles, while those of the female have five. The hind femur bears in addition to the lateral series of hairs two subventral bristles before the apex (fig. 3). The first segment of the mid tarsus is rather less than two-thirds the length of the second, while that of the hind tarsus is about three-quarters as long again as the second segment. The long apical bristle of the second segment of the hind tarsus reaches to the middle of the fifth segment in the ♂, and not quite so far in the ♀. The fourth segment is as in *P. nubicus*. The eighth sternite bears two long bristles before the end on each side, and numerous short ones besides. The anterior process of the elasper of the male is compressed, being asymmetrical in shape (fig. 12a). The upper or anterior edge is convex, bearing along this edge a number of rather long bristles. The second process is slender, with a few short hairs at its end. The ninth sternite (fig. 12b) gradually widens towards the apex. The plate of the penis (fig. 19) is curved upwards and pointed at the end. The shape of the eighth tergite in the female can best be made out from the figure (fig. 9). The length = 2.3 mm.

A very large series of both sexes of this species was secured near Shendi in February and March, 1901. We also received a single example from Mr. W. E. de Winton, which he took from a spirit specimen of *Mus gentilis*, taken near Suez on the 17th of October,

1900. The hosts from which the examples from Shendi were taken are *Acomys Witherbyi*, 3 specimens; *Gerbillus robustus*, 20 specimens; *Arvicanthis testicularis*, 20 specimens; *Dipodillus Watersi*, 1 specimen; *Dipus jaculus*, 1 specimen; *Genetta dongolana*, 1 specimen.

5.—*PULEX CHEPHRENTIS*, *n. sp.*

(Plate I, Fig. 7; Plate II, Figs. 14, 18).

The bristles and hairs of this species are extremely stout, a good character for its determination. The head is strongly rounded in front, the posterior portion bearing two oblique series of bristles, besides a row on the hinder edge. The palpus is a little longer than the maxilla, not reaching to the middle of the fore coxa. The metathoracical epimeron bears two rows of bristles, while the abdominal tergites have one only. The seventh tergite bears one long and two very short apical bristles. In the male all the abdominal sternites have one bristle, while in the female there are four, except on the first, where there is one. None of the femora bear complete rows of hairs. The hind femur has two subventral bristles on the outside, and one lateral bristle on the inside, and in addition a few bristles on the back. There is a prominent row of lateral bristles on the hind tibia, and between this row and the hinder edge there are from three to four more bristles stretching from the middle to the apex. The long apical bristle of the second segment of the hind tarsus reaches almost to the tip of the fourth segment. This segment is almost triangular in shape, and scarcely half as long again as it is broad. The fifth segment of the hind tarsus is as long as the third. In the male the clasper (fig. 14a) bears two slender dorsal processes. The anterior one is the shorter, and bears a very long apical bristle. The ninth sternite (fig. 14b) is lanceolate in shape, and somewhat curved upwards, with a few fine hairs near the end. The shape of the plate of the penis is shown in the figure (19). In the female the seventh sternite is triangular when viewed from the side, and somewhat truncate at its extreme end. The eighth tergite (fig. 7) bears two stout bristles below the stigma, and another one somewhat lower down. Further back it bears a subapical series of from five to seven less strongly chitinised bristles, and a few small hairs at the apex.

We secured four specimens of this interesting species at Cairo in January, 1901, two (♂ ♀) from *Dipus jaculus*, and two (♂ ♀) from *Acomys cahirinus*.

6.—\**PULEX WITHERBYI*, *n. sp.*

(Plate I, Figs. 2, 5, 6; Plate II, Figs. 11, 15).

A very distinct species. The palpus is but little shorter than the rostrum, reaching to the end of the fore coxa. The abdominal sternites bear two hairs on each side in both sexes. The hind femur has a row of eight or nine lateral bristles, one ventral bristle near the apex, and a tooth near the base. The hind tibia is very long, being four times as long as it is broad at the apex, and the hairs on it are somewhat reduced in number (fig. 2). The fifth segment of the fore

tarsus is very long, being nearly as long as the second, third and fourth segments together. The first segment of the mid tarsus is less than half the length of the second, while that of the hind tarsus is about the same length as the second, the longest apical bristle of the latter reaching nearly to the claw. The fourth segment of the hind tarsus is triangular, being but little longer than it is broad. In the male, the clasper (fig. 11*a*) bears three slender cylindrical processes, and the ninth sternite (fig. 11*b*) is narrow, pointed, and with the extreme end curved upwards. The plate of the penis (fig. 15) is broad and rounded at the end; the distal armature bearing a kind of brush. In the female, the eighth tergite (fig. 16) is very distinctive, it bears about ten rather thin and short hairs at the apical edge, and in addition three more on the proximal portion. The length = 1.86 — 2.86 mm.

We received sixteen specimens of this species from Mr. Harry F. Witherby, who took them from *Erinaceus albiventris*, near Gebel Auli, on the White Nile, in May, 1900. In addition to these, we secured twenty-nine specimens from Shendi: — *Erinaceus æthiopicus*, 9 specimens; *Vulpes niloticus*, 19 specimens; *Hycæna hycæna*, 1 specimen.

#### EXPLANATION OF PLATES.

##### PLATE I.

Fig. 1.—*Ceratopsylla ægyptius*; *as*<sup>1</sup>, *as*<sup>2</sup> = first and second abdominal tergites; *ep* = metathoracic epimeron.

- „ 2.—*Pulex Witherbyi*. Hind femur, tibia, and first tarsal segment, from outside.
- „ 3.—*Pulex cheopis*. Hind tibia, and first tarsal segment, from outside.
- „ 4.—*Pulex cleopatræ*. Second to fifth hind tarsal segments
- „ 5.—*Pulex Witherbyi*. Hind coxa from inner side.
- „ 6.—*Pulex Witherbyi*. Eighth abdominal tergite of ♀.
- „ 7.—*Pulex chephrenis*. „ „ „ „
- „ 8.—*Pulex cleopatræ*. „ „ „ „
- „ 9.—*Pulex cheopis*. „ „ „ „

##### PLATE II.

Fig. 10.—*Pulex nubicus*, ♂; *a*, clasper; *b*, ninth sternite.

- „ 11.—*Pulex Witherbyi*, ♂; „ „ „ „
- „ 12.—*Pulex cheopis*, ♂; „ „ „ „
- „ 13.—*Pulex cleopatræ*, ♂; „ „ „ „
- „ 14.—*Pulex chephrenis*, ♂; „ „ „ „
- „ 15.—*Pulex Witherbyi*, ♂; penis.
- „ 16.—*Pulex nubicus*, ♂; plate of penis.
- „ 17.—*Pulex cleopatræ*, ♂; „ „ „
- „ 18.—*Pulex chephrenis*, ♂; „ „ „
- „ 19.—*Pulex cheopis*, ♂; „ „ „

Tring Park, Tring:

January, 1903.

\* This species was mentioned by name, although not described, in "Bird Hunting on the White Nile," p. 60, by Harry F. Witherby. London: Office of Knowledge, 1902.

## SUFFOLK LEPIDOPTERA IN 1902.

BY THE REV. E. N. BLOOMFIELD, M.A., F.E.S.

Mr. A. E. Gibbs, F.L.S., of St. Albans, has again collected in the same Eastern district as in 1901, and has met with some very interesting species. His visit was during the greater part of July and the first few days of August. He has furnished me with a full list of the Macros taken by him, and sent me nearly all his Micros for confirmation or identification; these have also passed through Mr. C. G. Barrett's hands, to whom I am indebted for the names of the more difficult species.

The *Rhopalocera* which were so abundant in Bentley Woods in 1901, were last season scarce or absent; and comparatively few moths of any kind were met with there, but insects were far more plentiful at the seaside localities, Orford and Felixstowe, and the most notable capture perhaps was that of nine specimens of *Sphinx pinastri*, L., taken on the trunks of Scotch firs.

Of the *Bombyces*—*Porthesia chrysorrhæa*, L., was taken both at Orford and Felixstowe, *Lithosia aureola*, Hb., at Bentley Woods, while a specimen of *Zenzera æsculi*, L. (*pyrina*, L.) came to light at Felixstowe.

The *Noctuæ* were in abundance both at Orford and Felixstowe, and most of the species met with last year and recorded in Ent. Mo. Mag., 2nd series, vol. xiii, p. 6 were again taken. Of *Agrotis ripæ*, Hb., about 30 specimens; of *A. nalligera*, W. V. (*vestigialis*) a fine and varied series, and a very beautiful variety of *Miana furnucula*, W. V. (*bicoloraria*), light, with dark markings. Of species not met with last year, *Cymatophora ocularis*, L. (*octogesima*) came to light, and *Agrotis corticea*, Hb. to sugar at Felixstowe. In September several specimens of *Aporophylla australis*, Bdv., were taken at Felixstowe, and sent to Mr. Gibbs.

Of *Geometræ* I would only mention *Acidalia emutaria*, Hb., *Macaria liturata*, L., *Eupithecia subfulvata*, Haw., *E. lariciata*, Err., *E. subnotata*, Hb., *Coremia quadrifasciaria*, L., and *Pelurga comitata*, L., which were all taken at Orford; and *Chesias obliquaria*, W. V. (*rufata*) at Bentley Woods.

The only *Pyralides* worth mention were *Scoparia basistrigalis*, Knaggs, Orwell Woods; *S. lineola*, Curt., *S. trunciolella*, Stn., and *S. pallida*, Stph., at Felixstowe. The *Crambi* furnished several interesting species. \**Crambus fascinelinus*, Hb., was taken at Felixstowe both by Mr. Gibbs and Mr. Pyett, but only singly; this species has not before been recorded from any county but Norfolk until last year from Essex (Ent. Mo. Mag., Oct., 1902, p. 247); *Myelophila cribrum*, W. V., was fairly abundant on thistle heads, both at Orford and Felixstowe, and came to sugar; to these may be added *Homæosoma sinuella*, F., *H. eluviella*, Gn., and *Rhodophaea tumidella*, Zinck., at Orford, the latter also at Bentley, and *Nyctegretes achatinella*, Hb., at Felixstowe.

In 1901, but few *Tortrices* were taken, but for 1902 we have a good list; I

would only mention *Tortrix eratægana*, Hb., and *T. sorbiana*, Hb., Bentley Woods; *Dichelia Grotiana*, F., Orford and Chelmondiston; *Penthina picana*, Fröl. (*corticana*), Bentley Woods; *Peronea comparana*, Hb., and \**P. comariana*, Zell., Orford; *Spilonota neglectana*, Dup., Felixstowe; *Mivodia Ratzburgiana*, Sax., \**Orthotænia ericetana*, Westw., Orford; *Phtheochroa rugosana*, Hb., Chelmondiston; *Sciaphila pascuana*, Hb., and \**S. sinuana*, Stn. (a very rare species), Orford; *S. alternana*, W. V. (*chrysanthæana*); *S. conspersana*, Dougl., and *Orthotænia striana*, W. V., Felixstowe; \**Padisca occultana*, Dougl., Orford; *Olinidia ulmana*, Hb., Bentley and Orwell; *Semasia rufillana*, Zell., Felixstowe; *Retinia pinicolana*, Dbl., and *R. pinivorana*, Zell., Orford; \**Stigmonota Weirana*, Dougl., Bentley Woods; *Chrosis tesseraana*, Tr.; \**Argyrolepis zephyrana*, Tr., Felixstowe; *Idiographis inopiana*, Haw., and *Conchylis Francillana*, F., Orford.

The *Tineæ* were well represented; the best were *Tinea misella*, Zell., Orford; \**T. argentimaculella*, Stn., Orwell; *T. pallescentella*, Stn., and *Nemotois fasciellus*, F., Felixstowe; *Hyponomeuta euonymellus*, L. (*padi*), *Depressaria scopariella*, W. V., \**D. pastinacella*, Stn., \**Gelechia nigra*, Haw., *G. dodecella*, L., *G. pictella*, Zell., Orford; *G. celerella*, Dougl., Felixstowe; *Ecophora lunaris*, Haw., \**Ornix betula* and *Celestis Gysselinella*, Dup., at Orford.

I have also to thank the Rev. A. P. Waller, M.A., for a list of species taken by him at Hemley and Waldringfield, near Woodbridge, and Mr. C. A. Pyett for a few from Ipswich and Bentley. Where no place is given the locality is Hemley.

*Cerura furcula*, L., and *C. bifida*, Hb., Ipswich; *Nudaria senex*, Hb., flying at dusk in a damp meadow, \**Leucania albiguncta*, F., one at sugar, September 5th; *Senta ulva*, Hb., flying at dusk among reeds; *Luperina cespitis*, W. V., scarce, *Cirrhædia xerampelina*, Hb., larvæ from ash buds in April; *Pericallia syringaria*, L., which had not been seen there for some years; *Acidalia emutaria*, Hb., flying at dusk on the river bank and later settled on grasses; *Eupithecia succenturiata*, L., among mugwort, but scarce; *Cledeobia angustalis*, W. V., flying at dusk and coming freely to light; *Scoparia truncicolella*, Stn., Waldringfield, on fir trunks very commonly; *Agdistis Bennettii*, Curt., at light in July and again in September; *Platytes cerussellus*, W. V., Ipswich at light; *Crambus contaminellus*, Hb., in the marshes, scarce; *Chilo phragmitellus*, Hb., flying at dusk along reed beds; *Tortrix viburnana*, W. V., flying by day on the saltings among sea lavender; *Antithesia salicella*, L., a few in the Rectory garden; *Peronea sponsana*, F., Waldringfield, among beech; *Padisca oppressana*, Tr., Ipswich, July 2nd, *Haltonota fenella*, L., came to light; *Conchylis straminea*, Haw., at dusk; *Cerostoma vittella*, L., on tree trunks, scarce; \**Ecophora tripuncta*, Haw., two or three in the Rectory garden. To these may be added *Tinea merdella*, Zell., *Gelechia affinis*, Haw., and *Bucculatrix Boyerella*, Dup., Ipswich; and *Gelechia proximella*, Hb., Bentley Woods.

The species marked \* are new to the Suffolk List.

Gnestling Rectory, Hastings:

February, 1903.



*HESPERIA ALVEUS*, HÜBN., AS A NORFOLK INSECT.

BY JAMES EDWARDS, F.E.S.

For more than ten years past it has been known that a species of *Hesperia*, *sensu stricto*, other than *H. malvæ* had been taken in Norfolk, but the published accounts of its occurrence and the description of it given by Mr. Barrett (Lep. Brit. Is., i, p. 272) furnish no means of deciding whether the insect in question was really *alveus*, Hübn., *onopordi*, Rbr., or one or other of the two structurally distinct species at present standing in some collections as *serratulæ*, Rbr. So long ago as 1858 Rambur pointed out (Lép. de L'Andalousie, p. 63) that *H. alveus* and its immediate allies could only be separated with certainty by the form of the male genitalia; and the absolute necessity for taking these characters into consideration, if correct conclusions are to be arrived at, has been demonstrated by more than one student of *Hesperiidæ* since his day.

There is no inherent improbability in the occurrence of *H. alveus* in this country, and I had long intended to endeavour to place the determination of these Norfolk specimens on a more satisfactory basis. Quite recently the knowledge that *Edemera virescens*, L., is only known as British from one locality, a very few miles from the original habitat for *H. alveus*, directed my attention to the matter again. I communicated with the Rev. T. H. Marsh, the captor of these Norfolk *alveus*, with the result that he very kindly placed at my disposal one of the original examples; and I am thus enabled to say that the Cawston *Hesperia*, of which he took not a chance specimen merely, but a series, has the clasp-form proper to *H. alveus*, Hübn., as fixed by Rambur, *i.e.*, the apex of the clasp is very broadly rounded, "arrondie presqu'en cercle"; and further, that the form of the entire male genitalia agrees exactly with that which is absolutely diagnostic of *H. alveus*, Hübn., whether in its more prevalent state or in the more sparsely spotted form known as *H. Speyeri*, Stgr.

I venture to think that both the beetle before named and the butterfly are to be regarded as survivals of the ancient fauna of Central Norfolk, and that there is no need to attempt to account for the occurrence of the latter either by immigration or accidental introduction along with plants. *H. alveus*, if one may judge by the habits of its congener *H. malvæ*, hardly seems a likely subject for migration; and unless there is some direct evidence that plants capable of conveying *H. alveus* in one or other of its early stages were actually introduced into the damp valley at the edge of a wood at Cawston, in Norfolk, prior to the date of its capture, the introduction theory may safely be disregarded.

Colesborne, Cheltenham:  
February 19th, 1903.

# ORTHOPTERA AND NEUROPTERA IN LINCOLNSHIRE AND NOTTINGHAMSHIRE.

BY ELAND SHAW, M.R.C.S., F.E.S., &c.

But scant attention seems to have been given to the Orthopterous and Neuropterous fauna of these counties, and residing during the last two years in North Notts., an opportunity has been given me of collecting the already existing information on the subject; and this, with the addition of a few observations of my own, has resulted in the compilation of the following lists. For this opportunity I have to thank the Rev. Alfred Thornley, of South Leverton, who not only placed in my hands the records of the Lincolnshire Naturalists' Union, and his own records for Nottinghamshire, but generously presented me with his collection of local *Neuroptera*.

As regards the *Orthoptera* the determination of the species from Lincolnshire has been made either by Mr. G. T. Porritt or by myself; whilst I am responsible for the Notts. examples, with the exception of *Stylopyga decorata*, Br., which Mr. Malcolm Burr named for me. The great majority of the *Neuroptera* from both counties have been named by Mr. Porritt, some few by Mr. R. McLachlan, and the *Ephemeridæ* by the Rev. A. E. Eaton.

The only previous publication I know of bearing on the subject of this paper (except a few occasional notes) is a list of the "*Orthoptera*, *Neuroptera*, and *Trichoptera* of the Alford District of North Lincolnshire," published in "The Naturalist" for May, 1896, pp. 129—132, from the records of Mr. James Eardley Mason, and all the localities mentioned therein are included in the present lists.

No list of the Nottinghamshire species has, as far as I am aware, been published.

The number of species here recorded is:—Lincolnshire: *Orthoptera*, 17; *Neuroptera*, 71. Nottinghamshire: *Orthoptera*, 14; *Neuroptera*, 77.

The name of the captor is given in brackets after that of the locality; and to save space the following initials are used:—

(F. A.) F. Altoft, (J. W. C.) J. W. Carr, (R. T. C.) R. T. Cassal (R. W. G.) R. W. Goulding, (J. T. H.) J. T. Houghton, (H. W. K.) H. Wallis Kew, (J. E. M.) J. E. Mason, (E. A. W. P.) E. A. W. Peacock, (M. P.) Max. Peacock, (S. P.) Stephen Pegler, (A. S.) Arthur Smith, (E. S.) Eland Shaw, (A. T.) Alfred Thornley.

## LINCOLNSHIRE.

### ORTHOPTERA.

FORFICULIDÆ.—*Labia minor*, Linn., Alford (J. E. M.). *Forficula auricularia*, Linn., generally distributed.

BLATTIDÆ.—*Phyllodromia germanica*, Linn., Lincoln (J. E. M.). *Stylopyga orientalis*, Linn., Alford, Bilsby (J. E. M.); Cadney, Bottesford (E. A. W. P.); Lincoln (E. S.). *Periplaneta australasiae*, Fab., Louth (J. Larder).

ACRIDIDÆ.—*Stenobothrus viridulus*, Linn., Mumby Chapel (J. E. M.); Louth (H. W. K.); Brumby Common, Burringham, Cabourne (E. S.); Scotton Common, Manton Common (A. T.); *S. bicolor*, Chp., generally distributed; *S. elegans*, Chp., Mablethorpe (H. W. K.); Kirton Wash near Boston (A. T.); Ingoldmells (E. A. W. P.); Well Vale, Mumby Chapel (J. E. M.); *S. parallelus*, Zett., generally distributed. *Gomphocerus maculatus*, Thunb., Manton Common (A. T.); Linwood Common (E. A. W. P.); Brumby Common, Sweetingthorne Wood, Torksey, Laughterton (E. S.). *Pachytylus migratorius*, Linn., Withern (H. W. K.). *Tettix bipunctatus*, Linn., Linwood Warren (A. T.); Manton Common, Scotton Common (E. A. W. P.); Grantham (Records Lines. Nat. Union), Mumby Chapel (J. E. M.); Alford (Edw. Woodthorpe); Market Rasen (R. T. C.); Skellingthorpe Wood, Ashby (E. S.).

LOCUSTIDÆ.—*Leptophyes punctatissima*, Bose, Little Bytham (Stow); Gate Burton, Skellingthorpe Wood (E. S.). *Thamnotrizon cinereum*, Linn., Lincolnshire (H. W. K.), Linwood (R. W. G.). *Platyceles Roeseli*, Hagenb., Trusthorpe (H. W. K.).

GRYLLIDÆ.—*Gryllus domesticus*, Linn., Market Rasen, Louth, Burgh-on-Bain (C. S. Carter); Bottesford, Caistor (E. A. W. P.). *Gryllotalpa vulgaris*, Latr., Grimsby (G. Hicks).

#### PSEUDO-NEUROPTERA.

PSOCIDÆ.—*Elipsocus unipunctatus*, Müll., Alford (J. E. M.).

PERLIDÆ.—*Chloroperla grammatica*, Poda, Cadney (*fide* A. T.). *Nemoura variegata*, Oliv., Aby-with-Greenfield, Well (J. E. M.); Torksey (A. T.); *N. Meyeri*, Pict., Grantham (E. A. W. P.); *N. cinerea*, Oliv., Well (J. E. M.).

EPEMERIDÆ.—*Ephemera vulgata*, Linn., Freshney bogs, Broeklesby (A. S.); Bottesford (M. P.); Cadney (E. A. W. P.); *E. danica*, Müll., Cadney (E. A. W. P.). *Clæon dipterum*, Linn., S. Kelsey (*fide* A. T.). *Centroptilum luteolum*, Müll., Brant Broughton (E. S.).

ODONATA.—*Leucorrhinia dubia*, Lind. ("Lincolnshire," J. C. Dale), Brigg (W. Harecourt Bath). *Sympetrum striolatum*, Chp., Manton Common (M. P.); Mablethorpe, Scunthorpe (Records Lines. Nat. Union), Gate Burton (E. S.); Ashby (R. T. C.); Hartsholme (*fide* A. T.); Muckton Wood (J. E. M.); *Sym. scoticum*, Don., Cadney (A. T.). *Libellula depressa*, Linn., Aneaster Woods (E. Watt); Grimsby (A. S.). *Brachytron pratense*, Müll., Louth (R. W. G.); Marton drain (A. T.). *Æschna juncea*, Linn., Alford (J. E. M.); *Æsch. cyanea*, Müll., Cadney, Somerby, South Kelsey (E. A. W. P.); Linwood (R. W. G.); *Æsch. grandis*, Linn., Cadney (M. P.). *Calopteryx splendens*, Harr., Torksey (A. T.). *Lestes dryas*, Kirby, Brandon (Miss Stow) (E. S.); *L. sponsa*, Mablethorpe, Scunthorpe (Records Lines. Nat. Union); Cadney (M. P.); Brandon (E. S.); Barnetby (Philip Burton). *Erythromma najas*, Hansen, ("Lincolnshire," Stephen), Lucas, Brit. Dragon-flies, p. 252. *Pyrrhosoma nymphula*, Sulz., Theddlethorpe, Trusthorpe, Freshney bogs (A. T.); Cadney (E. A. W. P.); Lindborough (A. S.); Gate Burton, Marton drain (E. S.); Horncastle (Records Lines. Nat. Union). *Ischnura elegans*, Lind., Mumby

Chapel (J. E. M.); Theddlethorpe, Newton Cliff (A. T.); Broeklesby (A. S.); Cadney (M. P.); Marton drain, Brandon (E. S.); Burton by Lincoln (J. E. M.); Horneastle (Records Lines. Nat. Union). *Agrion puella*, Linn., Theddlethorpe, Trusthorpe, Freshney bogs, Newton Cliff, Marton drain (A. T.), Ashby (R. T. C.); Cadney, S. Kelsey (M. P.); Ludborough (A. S.); Brandon (Miss Stow); Mablethorpe (Records Lines. Nat. Union).

#### NEUROPTERA-PLANIPENNIA.

*Stalis lutaria*, Linn., Well, Farlesthorpe (J. E. M.); Freshney bogs (A. T.); Cadney, Hibaldstow (E. A. W. P.); Little Cotes, Broeklesby (A. S.); Bottesford (M. P.). *Raphidia xanthostigma*, Schum., Linwood (E. A. W. P.); *Sisyra fuscata*, Fab., Linwood (E. A. W. P.); *Micromus paganus*, Linn., Alford (J. E. M.). *Heimerobius micans*, Oliv., Well (J. E. M.); Cabourn (E. S.); *H. humuli*, Linn., Well (J. E. M.); Cabourn (E. S.); *H. stigma*, Steph., Aneaster (*fide* A. T.); Linwood (E. A. W. P.); *H. subnebulosus*, Steph., Alford (J. E. M.); Hallinton (H. W. K.); *H. nervosus*, Fab.—Alford (J. E. M.). *Chrysopa flava*, Scop., Ashby (R. T. C.); *C. alba*, Linn., Aby-with-Greenfield (J. E. M.); *C. flavifrons*, Brauer, Greenfield (F. A.); *C. septempunctata*, Wesm., Alford (J. E. M.); Greenfield (F. A.); *C. aspersa*, Wesm., Cadney (E. A. W. P.); *C. ventralis*, Curt., Aneaster (*fide* A. T.); *C. phyllochroma*, Wesm., Torksey (A. T.); Cadney (E. A. W. P.); *C. perla*, Linn.; Greenfield (F. A.); Horneastle (*fide* A. T.); Gainsborough (A. T.). *Nothochrysa fulviceps*, Authorpe (F. A.); *N. capitata*, Tothill Wood (J. E. M.). *Panorpa communis*, Linn., Freshney bogs, Great Cotes (A. T.); Ashby (R. T. C.); Ludborough (A. S.); Maltby Wood (R. W. G.); Cadney (E. A. W. P.); *P. germanica*, Linn., Well (J. E. M.); Greenfield (F. A.); Peaks (A. S.); Ashby (R. T. C.); Kirton, Freshney bogs (*fide* A. T.); Cadney (E. A. W. P.).

#### TRICHOPTERA.

*Neuronia ruficus*, Scop., Cadney (E. A. W. P.). ? *Phryganea grandis*, Linn., Louth, cases (H. W. K.). *Colpotaulius incisus*, Curt., Bilsby (J. E. M.); Newton Cliff, Marton drain (E. S.). *Grammotaulius atomarius*, Fab., Alford, Sutton-le-Marsh (J. E. M.). *Glyptotælius pellucidus*, Retz., Well (J. E. M.); Ashby (R. T. C.). *Linnophilus rhombicus*, Linn., Alford (J. E. M.); Little Cotes (A. S.); Revesby (R. W. G.); *L. flavicornis*, Fabr., Torksey, Marton drain (A. T.); *L. marmoratus*, Curt., Ashby (R. T. C.); *L. stigma*, Curt., Marton drain (A. T.); *L. lunatus*, Curt., Alford (J. E. M.); Ashby (R. T. C.); Cadney (E. A. W. P.); *L. vittatus*, Fab., Anthorpe, Haugh (J. E. M.); Torksey (A. T.); Gate Burton (E. S.); *L. affinis*, Curt., Skellingthorpe Wood (E. S.); *L. auricula*, Curt., Linwood (*fide* A. T.); *L. extricatus*, McLach., Gate Burton (E. S.); *L. hirsutus*, Pict., Great Cotes (*fide* A. T.); *L. sparsus*, Curt., Alford (J. E. M.); Grantham, Mablethorpe (*fide* A. T.). *Stenophylax permistus*, McLach., Skellingthorpe Wood (E. S.). *Micropterna lateralis*, Steph., Greenfield (F. A.); *Micr. sequax*, McLach., Ashby (R. T. C.). *Halesus digitatus*, Schr., Louth (R. W. G.). *Chatopteryx villosa*, Fabr., Well (J. E. M.). *Silo pallipes*, Fabr., Great Cotes (*fide* A. T.). *Leptocerus annulicornis*, Steph., Gate Burton (E. S.); *L. aterrimus*, Steph., Caistor (E. S.); *L. dissimilis*, Steph., Sudbrooke (J. E. M.). *Hydropsyche angustipennis*, Curt., Horneastle (*fide* A. T.); Gate Burton (A. T.).

## NOTTINGHAMSHIRE.

## ORTHOPTERA.

FORFICULIDÆ.—*Labia minor*, Linn., S. Leverton (A. T.) ; near Nottingham (Sturges Dodd) ; Sturton-le-Steeple (E. S.). *Forficula auricularia*, Linn., S. Leverton (A. T.) ; N. Leverton, North Clifton, Cottam (E. S.).

BLATTIDÆ.—*Periplaneta americana*, Linn., Worksop (J. T. H.) ; *P. australis*, Wiseton (E. S.). *Stylocyga orientalis*, Linn., N. Leverton (E. S.) ; Nottingham (J. W. C.) ; *S. decorata*, Brunner, Worksop (J. T. H.).

ACRIDIDÆ.—*Stenobothrus viridulus*, Linn., Kingston-on-Soar (A. T.) ; Edwinstowe, Osberton (E. S.) ; *S. bicolor*, Chp., Retford (S. P.) ; S. Leverton (A. T. and E. S.) ; Thorney (J. W. C.) ; Kingston-on-Soar, Everton (A. T.) ; Cottam, N. Leverton, Nottingham, Claborough, Rampton (E. S.) ; *S. parallelus*, Zett., Retford district, Kingston-on-Soar (A. T.) ; Treswell Wood (A. T. and E. S.) ; Thorney (J. W. C.) ; Claborough, Cottam (E. S.). *Gomphocerus maculatus*, Thunb., Edwinstowe, Everton (A. T.) ; Wheatley (Rev. T. Chamberlin). *Tettix bipunctatus*, Linn., Retford (S. P.) ; Burton Joyce (J. W. C.).

LOCUSTIDÆ.—*Leptophyes punctatissima*, Bose, S. Leverton, Treswell Wood (A. T.) ; N. Leverton (E. S.), *Meconema varium*, Fabr., Treswell Wood (A. T. and E. S.) ; Aspley Woods (A. T.).

GRYLLIDÆ.—*Gryllus domesticus*, Linn., Nottingham (J. W. C.).

## PSEUDO-NEUROPTERA.

PERLIDÆ.—*Chloroperla grammatica*, Poda, Clumber (S. P.). *Nemoura variegata*, Oliv., S. Leverton (A. T.) ; N. Leverton, Treswell Wood (E. S.) ; *N. Meyeri*, Pict., S. Leverton (A. T.).

EPTHEMERIDÆ.—*Ephemera vulgata*, Linn., Babworth (J. W. C.) ; *E. danica*, Müll., Gonalston (J. W. C.). *Clæon dipterum*, Linn., N. Leverton, S. Leverton (A. T.) ; *C. simile*, Eln., Osberton (E. S.). *Baëtis verna*, Curt., Clifton Grove (*vide* A. T.).

ODONATA.—*Sympetrum striolatum*, Chp., Treswell Wood, Retford (A. T.). *Libellula depressa*, Linn., S. Leverton, Treswell Wood (A. T.) ; Widmerpool (J. W. C.) ; *L. quadrimaculata*, Linn., N. Leverton (E. S.). *Æschna cyanea*, Müll., Treswell, S. Leverton, Stokeham (A. T.) ; Shireoaks (J. T. H.) ; *Æ. grandis*, Linn., Chilwell (*vide* A. T.). *Calopteryx splendens*, Harr., Cottam (A. T.) ; Rampton, Littleborough (A. T. and J. W. C.) ; Treswell Wood (E. S.). *Pyrhosoma nymphula*, Sulz., Treswell Wood (A. T.) ; Shireoaks (J. T. H.). *Ischnura elegans*, Lind., S. Leverton, Retford (A. T.) ; Saundby (E. S.) ; Shireoaks (J. T. H.). *Agrius pulchellum*, Lind., Saundby (E. S.) ; *A. puella*, Linn., S. Leverton, N. Leverton, Retford, Treswell Wood (A. T.) ; Saundby, Cottam, Cossall (E. S.) ; Shireoaks (J. T. H.).

## NEUROPTERA-PLANIPENNIA.

*Sialis lutaria*, Linn., Retford (A. T.) ; Rainworth (J. W. C.) ; N. Leverton, Cottam (E. S.) ; *S. fuliginosa*, Pict., Eaton (J. W. C.). *Raphidia notata*, Fabr., Treswell Wood (A. T.) ; *R. xanthostigma*, Schum., Treswell Wood (A. T.). *Microgaster paganus*, Linn., Treswell Wood (A. T.) ; Shireoaks (J. T. H.). *Hemerobius micans*, Oliv., S. Leverton, N. Leverton (A. T.) ; Treswell Wood (E. S.) ; *H.*



*humuli*, Linn., S. Leverton (A. T.); Treswell Wood (E. S.); Worksop (J. T. H.); *H. subnebulosus*, Steph., S. Leverton (A. T.); Shireoaks, Worksop (J. T. H.); Nottingham (J. W. C.); *H. nervosus*, Fab., S. Leverton (A. T.); Shireoaks (J. T. H.). *Chrysopa flava*, Scop., S. Leverton, N. Leverton, Treswell Wood (E. S.); Shireoaks (J. T. H.); *C. alba*, Linn., S. Leverton, Treswell Wood (A. T.); N. Leverton (E. S.); Shireoaks (J. T. H.); *C. tenella*, Schud., Shireoaks (J. T. H.); *C. vulgaris*, Schud., S. Leverton (A. T.); Shireoaks (J. T. H.); *C. septempunctata*, Wesm., N. Leverton (E. S.); Shireoaks (J. T. H.); *C. aspersa*, Wesm., S. Leverton (A. T.); *C. ventralis*, Curt., S. Leverton (A. T.); Shireoaks (J. T. H.); *C. phylochroma*, Wesm., Shireoaks (J. T. H.); *C. perla*, Linn., S. Leverton, Langford Moor (A. T.); Treswell Wood (E. S.). *Panorpa communis*, Linn., S. Leverton, Treswell Wood (A. T.); Strelly (J. W. C.); *P. germanica*, Linn., S. Leverton, Treswell Wood (A. T.); Edwinstowe (E. S.); Ollerton (J. W. C.); Worksop (J. T. H.).

### TRICHOPTERA.

*Neuronia ruficus*, Scop., Worksop (J. T. H.); Widmerpool (J. W. C.); *Phryganea grandis*, Linn., Shireoaks (J. T. H.); *P. varia*, Fabr., Shireoaks (J. T. H.). *Grammotaulius atomarius*, Fabr., Wellow (J. W. C.); Shireoaks (J. T. H.); N. Leverton, S. Leverton (E. S.). *Glyptotælius pellucidus*, Retz., Treswell, S. Leverton (E. S.). *Limnophilus rhombicus*, Linn., Shireoaks (J. T. H.); *L. flavicornis*, Fabr., S. Leverton (E. S.); *L. marmoratus*, Curt., S. Leverton (A. T.); Shireoaks (J. T. H.); *L. lunatus*, Curt., S. Leverton (A. T.); Shireoaks (J. T. H.); N. Leverton, Cottam (E. S.); *L. politus*, McLach., Cottam (E. S.); *L. villatus*, Fabr., S. Leverton, Treswell Wood (A. T.); N. Leverton (E. S.); *L. affinis*, Curt., S. Leverton (A. T.); *L. auricula*, Curt., S. Leverton, N. Leverton (A. T.); Shireoaks (J. T. H.); Rampton (E. S.); *L. hirsutus*, Pict., Shireoaks (J. T. H.); *L. sparsus*, Curt., S. Leverton (A. T.); Shireoaks (J. T. H.); Treswell Wood (E. S.). *Anabolia nervosa*, Curt., S. Leverton, Retford (A. T.); Shireoaks (J. T. H.); Edwinstowe (E. S.). *Stenophylax stellatus*, Curt., Shireoaks (J. T. H.); S. permistus, McLach., S. Leverton (A. T.); Epperstone Park (J. W. C.). *Micropterna sequax*, McLach., S. Leverton (A. T.). *Halesus radiatus*, Curt., Shireoaks, Worksop (J. T. H.); Edwinstowe (E. S.). *Goëra pilosa*, Fabr., Shireoaks (J. T. H.). *Silo pullipes*, Fabr., Misterton (A. T.). *Brachycentrus subnubilus*, Curt., Retford (A. T.). *Molanna angustata*, Curt., Clumber Park (E. S.). *Odontocerum albicorne*, Scop., Shireoaks (J. T. H.). *Leptocerus aterrimus*, Steph., Rampton (E. S.); Shireoaks (J. T. H.); *L. cinereus*, Curt., W. Drayton (E. S.); Worksop (J. T. H.); *L. albifrons*, Linn., W. Drayton (E. S.); *L. bilineatus*, Linn., Rampton (E. S.). *Mystacides azurea*, Linn., Retford (A. T.); W. Drayton (E. S.); *M. longicornis*, Linn., W. Drayton, Cossall (E. S.). *Hydropsyche instabilis*, Curt., Notts. (J. T. H.); *H. angustipennis*, Curt., Retford (A. T.); Radcliffe-on-Trent, Bunny (J. W. C.); Rampton, Cottam (E. S.); *H. guttata*, Pict., Marham (A. T.). *Plectroercenia conspersa*, Curt., Nottinghamshire (J. T. H.). *Polycentropus flavomaculatus*, Pict., Retford (E. S.); Radcliffe-on-Trent (J. W. C.). *Cyranus trimaculatus*, Curt., W. Drayton (E. S.). *Tinodes Wæneri*, Linn., Shireoaks, Worksop (J. T. H.); Osberton (E. S.). *Agraylea multipunctata*, Curt., Rampton (E. S.).

HEMIANAX EPHIPPIGER, BURM., TAKEN AT DEVONPORT IN  
FEBRUARY.

BY ROBERT McLACHLAN, F.R.S., &c.

A short time ago I received from Mr. J. H. Keys, of Plymouth, a cutting from the "Western Morning News" of March 2nd, consisting of a letter from Mr. Wm. Header, of 195, Union Street, Plymouth, to the effect that Mr. Colwill, the driver of a local tramcar, had caught, a few days previously, at Devonport, a fine dragon-fly. Naturally I was curious, and somewhat incredulous, so I asked Mr. Keys to obtain more information if possible. A few days later the dragon-fly arrived, and to my astonishment proved to be a fine female of *Hemianax ephippiger*, Burm., a species almost as large as our familiar *Anax imperator*.

*H. ephippiger* is essentially a native of Africa, extending also far into Asia. Several times migratory swarms of it have occurred on the European shores of the Mediterranean, and it occasionally occurs singly in various south European localities, but there is no evidence that it breeds in Europe, though it may do so for a time. Further north a specimen was taken near Zürich by Dr. Ris, and another in Brussels on June 4th, 1874. These stragglers have been observed in summer or autumn, and I should have felt but little surprise had a specimen been found on our south coast in hot dry weather in summer. But for one to be found on February 24th (that was the exact date) is quite another matter, and we must look for another explanation. This is perhaps supplied by an observation published by Mr. G. F. Mathew, R.N., in Ent. Mo. Mag., xviii, p. 258 (April, 1882); Mr. Mathew there states that this species was in great profusion at the mouth of the River Ouro on the West Coast of Africa (lat. 23° 40' N.) at the end of December, and that many of the insects flew off to the ship and settled on the rigging. It is quite possible therefore that this Devonport example may have come on board a passing vessel off the African coast, and then have fallen into a lethargic condition, waking up during the high temperature that prevailed in the English Channel towards the end of February.\* I am greatly indebted to Mr. Keys for taking a great deal of trouble over this matter. Mr. Header, into whose shop the insect was taken *while still alive*, is a fishing-tackle manufacturer, with some knowledge of Natural History. Mr. Colwill, the captor, says he caught the insect with his cap, and that it was being chased by boys. Mr. Keys has quite satisfied himself as to the genuineness of the matter; but it would be obviously incorrect to announce "A new British Dragon-fly" on the strength of this example. It is now in my possession.

Lewisham, London :

March 17th, 1903.

SILPHA SUBROTUNDATA, STEPH., A DISTINCT SPECIES.

BY THE REV. W. F. JOHNSON, F.E.S.

I see that Dr. J. H. Bailey (Ent. Mo. Mag., vol. xiii, 2nd series, p. 238) has been taking *S. subrotundata* in the Isle of Man, but has not met with *S. atrata* there. It is noteworthy that the same is the case

\* It has been suggested that there may have been some connection of the appearance of this insect with the dust-laden rain which fell over a wide area in the south of England a few days previously. —R. McL.

in Ireland. There *S. subrotundata* is common enough, but *S. atrata* (pace Mr. J. J. Walker) has not been found. The differences between them are decided and constant. The former is on the average larger; it is broader in proportion to its length, less parallel-sided, and has the disc of the thorax less closely punctured; the reflexed margin of the elytra is very strongly developed and extends almost to the apex, while in *S. atrata* the margin is much feebler and scarcely reaches beyond the middle of the elytra. I think, therefore, that *S. subrotundata* may very well claim to be a distinct species and not a mere variety of *S. atrata*. It is found in a different county, it has decided and constant points of difference, and it breeds true to itself, varying indeed in size and colour, but still maintaining its distinguishing characteristics of sculpture and structure. I suggest that this solves the question as to the absence of *S. atrata* from Ireland and the Isle of Man, for if *S. subrotundata* be a distinct species, the absence of *S. atrata* from its habitat is a matter of indifference. As to its derivation, I do not think we have any data to work upon, nor do I think we have any means of knowing which of these insects existed first. It is true that *S. atrata* has the wider range, but I am not disposed on that account to allow it greater antiquity, and I fancy that Ireland and Isle of Man are just as old as the rest of the world.

Acton Glebe, Poyntzpass:  
December 20th, 1902.

#### DESCRIPTION OF A NEW EUROPEAN *SORONIA*.

BY MALCOLM CAMERON, M.B., R.N., F.E.S.

##### *SORONIA ELONGATA*, n. sp.

More elongate and narrower than *S. punctatissima*, Ill., and *S. grisea*, L., shining, of a ferruginous-red colour. Head transverse, with an obscure V-shaped impression on the front, rather thickly and coarsely punctured, the pubescence yellow, scant; antennæ ferruginous. Thorax transverse, slightly rounded on the sides, narrowed in front, its greatest breadth just before the base; anterior margin broadly excavate, the anterior angles prominent, but rounded; lateral borders narrowly explanate; posterior border slightly sinuate on either side, posterior angles obtuse; the surface with a rather dense double punctuation, consisting of larger and smaller punctures; ferruginous-red, not spotted with black, the pubescence scanty, yellow. Elytra elongate, parallel in the anterior two-thirds, then gradually rounding off; lateral border narrowly depressed; the surface of each elytron with four feeble longitudinal ridges and irregular rows of large coarse punctures, the interspaces being thickly and more finely punctured; ferruginous-red, the scutellary region a little obscure, a small yellowish-red ill-defined spot on the

suture at the junction of the middle and posterior thirds, followed by a very ill-defined brownish patch; pubescence yellow, a few scale-like semi-erect hairs scattered over the posterior third. Legs reddish-testaceous. Length—5 mm.

A single specimen taken under the bark of a pine tree at Prinkipo, an island in the Sea of Marmara, in April, 1902. It differs at once from *S. punctatissima* by its narrow, elongate and depressed form, the double punctuation of the thorax and elytra, and the absence of any black spots. From *S. grisea* it is distinguished by its narrow, elongate, depressed form, the coarser punctuation (which is double), and by the absence of definite black spots on the elytra; the colour also is ferruginous.

From *S. oblonga*, Bris., it may be known by its more depressed form, and the absence of black spots on the thorax and elytra (*S. oblonga* has the elytral spots larger and blacker than *S. grisea*).

The following table will serve to differentiate the species:—

A.—Form broader, punctuation simple.

1.—Punctuation coarser, average size larger; anterior tibiæ in ♂ angularly curved.....*punctatissima*, Ill.

2.—Punctuation finer, average size smaller; anterior tibiæ in ♂ simple...  
*grisea*, L.

B.—Form narrower, punctuation double.

1.—More convex, black spots on elytra large and well marked ...  
*oblonga*, Bris.

2.—Depressed, no black well-marked spots on elytra.....*elongata*, n. sp.

H.M.S. "Harrier," Aden:

November 17th, 1902.

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*Coleoptera in Berkshire.*—It is just two years since I first started collecting *Coleoptera* in Berkshire, and I find now that I have identified about 1050 species, and have some 300 more specimens, chiefly *Homalota*, to determine. Among my captures I think the following species are sufficiently uncommon to be worth recording:—*Helophorus dorsalis*, Marsh., *Aleochara mycetophaga*, Kr., *Oligota parva*, Kr., *Quedius longicornis*, Kr., *Q. brevicornis*, Thoms., *Ocypus fuscatus*, Grav. (one specimen each of the last three from the same wood), *Scopæus sulcicollis*, Steph. (three specimens from a sand-pit), *Stenus atratulus*, Er., *Coryphium angusticollis*, Steph., *Pseudopsis sulcata*, Newm., *Clambus minutus*, Sturm, *Agathidium rotundatum*, Gyll., *A. nigrinum*, Sturm, *Anisotoma oblonga*, Er., *Agaricophagus cephalotes*, Schmidt (these last three by sweeping very wet grass in late autumn), *Ptenidium turgidum*, Thoms., *Epuraea decemguttata*, F., *E. diffusa*, Bris., *Cryptarcha strigata*, F., *C. imperialis*, F. (the last three common at the exuding sap of Cossus-infected trees), *Thalysa sericea*, Sturm, *Meligethes umbrosus*, Sturm, *Monotoma brevicollis*, Aubé, *Diplocelus fagi*, Guér. (two specimens under bark, one, however, slipped through my fingers), *Antherophagus silaceus*, Herbst.

*Cryptophagus pubescens*, Sturm (common in wasps' nests), *C. umbratus* Er., *Mycetophagus quadriguttatus*, Müll., *Aphodius Zenkeri*, Germ. (one of the commonest *Aphodii* in the neighbourhood), *Ptinus subpilosus*, Müll., *Orsodacna lineola*, Panz., *Tetraloma Desmaresti*, Latr., *Orchesia micans*, Panz., *Conopalpus testaceus*, Ol., *Anaspis Garneysi*, Fowl., *Xylophilus populneus*, F., *X. oculatus*, Gyll., *Metæcus paradoxus*, L., and *Orobitis cyaneus*, L.—NORMAN H. JOY, Bradfield nr. Reading: January 26th, 1903.

*Lathridius Bergrothi*, Reitt., in Norfolk.—I have to report yet another locality for *Lathridius Bergrothi*, Reitt. I find I took one specimen by sifting some rubbish in a malt-house at Wells, Norfolk, in October. Among other beetles I took at Wells were several specimens of *Cryptophagus populi*, Payk., from an old gate-post. On the sand-hills I found *Hydnobius Perrisi*, Fairm., and *H. punctatissimus*, Steph.—ID.

*Lathridius Bergrothi* at Southampton.—On examining some macaroni that had gone mouldy in the box, and in which also were larvæ of a moth, I found many examples of the above-named beetle. All the specimens were dead, but well preserved; and with them were one or two *Mycetæa hirta*, and a few of a *Corticaria*, very like *C. fulva*, but which seems to me to be of a species not in our lists, having the edges of the thorax denticulate. It is evident that the beetles were in the macaroni in the box at least before it arrived here, probably when it was exported from Italy, and it is a good example of how such species get transported from place to place.—HENRY S. GORHAM, Shirley Warren, Southampton: Feb. 18th, 1903.

*Phytosus nigriventris*, Chev., near Christchurch.—It may be worth recording that I met with this insect at Hengistbury Head, near Christchurch, in 1886, but did not recognise it as distinct from *P. balticus* at the time.—ID.

*Coleoptera in Armagh and Down in 1902.*—Last year was anything but favourable for the collection of insects. I managed, however, to get a few beetles which may be worth noting, apart from those obtained at Lough Neagh, *vide* Ent. Mo. Mag., vol. xiii, 2nd series, p. 218. At the end of March my friend, Mr. W. H. Patterson, M.R.I.A., sent me from Newcastle, Co. Down, *Aphodius scybaliarius*, F., *Geotrupes typhaeus*, L., and *Otiorrhynchus muscorum*, Bris.; all three are characteristic of Newcastle. I had several times looked along the edge of Lough Shark for *Pelophila borealis*, Payk., without success, in fact I was disappointed at the apparent lack of beetles in what seemed a very suitable locality. Last spring, however, I hit upon the proper place, and found not only *P. borealis*, but several other interesting insects. These were all on the County Down side of the lake, and were taken in April, May and June. *Bembidium Mannerheimi*, Sahlb., was very plentiful among stones and refuse. Among numerous *Staphylinidæ* I may mention *Philonthus ventralis*, Grav., *P. quisquiliarius*, Gyll., var. *dimidiatus*, Er., and *P. longicornis*, Steph., *Lathrobium terminatum*, Grav., var. *immaculatum*, Fowler, also the weevils, *Bagous glabrirostris*, Herbst (*lutulentus*, Gyll.), *Poophagus sisymbrii*, F., and *Litodactylus leucogaster*, Marsh., none of these



having been previously recorded from Co. Down. In the canal near Newry, but in County Armagh, I found *Hyphydrus ovatus*, L., to be quite common. In the same locality I took a beautiful fresh specimen of *Donacia claripes*, F., a new record for Ulster, the beetle having only been met with in Roscommon and Clare previously. This capture was made on June 28th. On August 18th I took on a thistle flower in one of my fields a single specimen of *Anthrophagus pallens*, Gyll., its first capture in County Armagh. I searched in vain on adjoining flowers for another, and examined the bank near where I found it for a nest of *Bombus*, but to no purpose. *Bombi*, however, were not as numerous as usual, owing to the wet season. In the latter end of September I had occasion to go out to a hayloft, and my attention was at once drawn to the window which I saw to be covered with beetles. I took samples and found *Cryptophagus scutellus* and *Eucnemis transversus* to be the most numerous; besides there were *Stenus similis*, *Monotoma picipes*, *Coninomus nodifer*, *Corticaria elongata*, *Typhaea fumata*, *Apion subulatum*, *A. virens*, *Sciaphilus muricatus*, *Hypera punctata* and *Centhorrhynchidius troglodytes*. This gives some idea of what may be in hay, but if I had been able to make a list of those that were among my forced grass when thrashing it for seed, I should have had a much longer one; I was, however, too busy to do more than take a casual look at them, for grass seed does not allow of delay, and we were literally working against time. In May I met with *Cilex silphoides* and *Hister cadaverinus* about a manure heap, and *Lochmaea crataegi* on hawthorn.—W. F. JOHNSON, Acton Glebe, Poyntzpass: January 9th, 1903.

*Notes on Ichneumonidae*.—I thought it was a well-known fact that *Alomyia* was parasitic on the larva of *Geotrupes* (cf. ante p. 28); I have myself taken the black var. (*nigra*) ovipositing in cow dung. The Rev. W. Kirby had the assistance of both Stephens and Curtis in determining his *Ichneumonidae*, and I do not think there is any mistake in his determination. Mr. Morley's Chalcid (*l. c.*) is most probably *Encyrtus scutellaris*, Dalm. *Linoceras macrohatus* preys probably upon *Odynerus* as well as *Eumenes*, as it occurs here. I found the sexes of the following species:—*Amblyteles flavocinctus*, *Linoceras macrohatus*, *Cryptus elegans*, *Cryptus signatorius*, *Phytodietus ornatus*, *Eidemopsis scabriculus*. Hampshire is a county of which the insect fauna (inclusive of the New Forest) has been very well worked up, and the "Victoria History" gives by no means a fair *resumé* of the work that has been done. For instance, I could have furnished a list of several hundred *Ichneumonidae*.—C. W. DALE, Glanvilles Wootton: February 4th, 1903.

*Micromus angulatus*, Steph., and a few other Neuroptera and Trichoptera from Colvend.—At the beginning of last August I had a few days' collecting at Colvend, in Kirkendbrightshire, a locality which was worked for two seasons many years ago by the late Dr. Buchanan White. Unfortunately a bad and late season and bad weather at the time of my two short visits did not help to show off the place to advantage; at the same time I am convinced that the district is an exceptionally good one, and would, under more favourable circumstances, repay a longer period of work.

The only really noteworthy species taken was a single example of *Micromus angulatus*, Steph. (*aphidivorus*). I was disappointed in not seeing one or two

dragon-flies recorded by Dr. Buchanan White, and not seen by me hitherto from any part of Scotland. The only species taken were *Sympetrum scoticum*, Donovan, *Enallagma cyathigerum*, Charp., and *Ischnura elegans*, Van der L.

*Trichoptera* were very abundant, and the various lakes scattered over the district cannot fail to be most productive of species. Amongst those noticed were *Limnophilus marmoratus*, Curt., *L. lunatus*, Curt., *L. auricula*, Curt., *L. centralis*, Curt., and *L. sparsus*, Curt., *Silo pallipes*, F., *Lepidostoma hirtum*, F., *Leptocerus aterrimus*, Steph., *L. fulvus*, Ramb., and *L. cinereus*, Curt., *Mystacides azurea*, Lin., *Ectis ochracea*, Curt., *E. lacustris*, Piet., and *E. testacea*, Curt., *Tricnoides bicolor*, Curt., *Oxyethira costalis*, Curt., *Tinodes weneri*, L., *Polycentropus multiguttatus*, Curt., *Agapetus fuscipes*, Curt., and others.—KENNETH J. MORTON, 13, Blackford Road, Edinburgh: March, 1903.

*Vanessa Antiopa* on Putney Heath.—Shortly before the great thunderstorm of September 11th last, my friend Mr. E. G. Waddilove, when walking along the edge of the heath, saw a Camberwell Beauty rise from the ground close to him. He noted with surprise that the border to the wings was of a yellower tint than he had expected to see in a British specimen. Can it have been reared from a foreign larva or pupa and set at liberty? Curiously enough the next day Mrs. Waddilove saw the same [?] specimen close to the village of Roehampton, about a quarter of a mile from the spot where her husband had seen it. Both are quite familiar with the appearance of the insect.—G. B. LONGSTAFF, Highlands, Putney Heath, S.W.: February 19th, 1903.

[We think it quite probable that the specimen in question had been intentionally set at liberty or had escaped.—EDS.]

*Smerinthus tilie* pupating under bark.—On March 8th of last year, as I was pulling bits of bark and wood off a rotten birchwood post, a chrysalis of *S. tilie* was found. I regret that I am unable to say whether it was simply covered by the bark or whether it was enclosed by wood, as I did not observe at the time. It was near a tree which was its probable food-plant.—G. HAMILTON, Corley Rectory, Coventry: February 26th, 1903.

The type of *Xenosia eremias*, Meyr.—In part 3 of Trans. Ent. Soc. Lond., 1902, Col. Chas. Swinhoe has a paper, entitled, "New and little known species of *Drepanulidæ*, *Epiplemidæ*, *Micromidæ*, and *Geometridæ*, in the National Collection" [British Museum], in which he states (p. 627) that the type of the above species is in the Sydney [Australian] Museum.

I am directed by the Curator of the Australian Museum, Mr. R. Etheridge, Jun., to point out that this is an error. The species in question was described by Meyrick in P. L. S. N. S. W., vol. vi (2), 1891, p. 600, the locality being given as N. S. Wales, but without any intimation as to where the type was deposited. Moreover, I have carefully examined the register and cabinets in the Australian Museum, and there is nothing to show that *X. eremias* was ever acquired by the Trustees, either by presentation, purchase, or exchange, and so can only assume that the type is in the collection of Mr. Meyrick.—W. J. RAINBOW, Entomologist, Australian Museum, Sydney, N. S. Wales: February 7th, 1903.

## Reviews.

A CATALOGUE OF THE LEPIDOPTERA OF NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE. Vol. i, *Macro-Lepidoptera*: by JOHN E. ROBSON, F.E.S., &c. Pp. 318, 8vo. Forming Vol. xii of the Natural History Transactions of the N. H. Society of Northumberland, Durham, and Newcastle-upon-Tyne, and the Tyneside Naturalists' Field Club. London and Edinburgh: Williams and Norgate. Newcastle: F. and W. Dodsworth. 1899-1902.

The old established Society under whose auspices this Catalogue is produced, has always been noted for the excellence of its Local Lists. The List of *Lepidoptera* produced by Mr. Robson and his colleagues (of whom Mr. J. Gardner stands conspicuously forward) adds yet another example, and we regret that our limited space is not equal to a lengthy notice. The nomenclature (more than ever a "burning question") is that adopted by Barrett. The notices for each species are very full, and in the case of the few species concerning which any small doubt may exist, endeavours have been made to analyse their claims on either side in a most judicious manner. The List may worthily be placed amongst the most reliable of other local enumerations of British *Lepidoptera*. About 490 species are indicated to the end of the *Geometridæ*. We are not quite clear as to what is intended by the suggestion that *Pieris brassicæ* and *rapæ* may not be truly indigenous in this country, but possibly introduced by "the Romans." There are few printer's errors; but one error by its persistency is evidently not to be attributed to the printer, and that is the misspelling of the Rev. Harpur Crewe's name (rendered as "Harper") in connection with the *Eupithecia*. We look forward with expectation to the commencement of the "Micros."

TRANSACTIONS OF THE CITY OF LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY for the year 1902. Pp. 72, 8vo. London: 1903.

Much information may be gained from this well-got-up and carefully corrected brochure. The contents are practically entirely entomological, but with no Index!! It commences with a List of Members (which might be longer), followed by concise reports of the Meetings. The papers printed *in extenso* (including the Address of the President, Mr. Prout) are of much value: we may cite those by Messrs. Mera, Kaye and Bacot, and especially the memoir on the earlier stages of *Phyllocnistis suffusella* by Mr. Sici, which shows evidence of power of minute observation and capability for exhaustive bibliographical research. The nomenclature employed is most "up-to-date" (how long will it last?). This Society claims to be the direct descendant of the old Haggerston Entomological Society [*cf.* Ent. Mo. Mag. (1), x, p. 185, January, 1874].

## Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: Fourteenth Annual Meeting, February 16th, 1903.—Mr. G. T. BETHUNE-BAKER, Vice-President, in the Chair.

The Annual Reports of Council and of the Treasurer, &c., were presented.

The following were elected to be the Officers and Council for the coming year President, Mr. G. T. Bethune-Baker, F.L.S., F.Z.S., F.E.S.; Vice-President and

Treasurer, Mr. R. C. Bradley ; Librarian, Mr. A. H. Martineau, F.E.S. ; Hon. Sec., Mr. Colbran J. Wainwright, F.E.S. ; and Members of Council, Messrs. H. Willoughby Ellis, F.E.S., J. T. Fountain, Aug. D. Imms, and G. W. Wynn.

The following were exhibited :—by Mr. G. T. Bethune-Baker, the remarkable *Lycanid*, *Liphyra brassolis*, Hew., in various stages, larvæ in spirit, pupæ and imagines. He gave an account of its remarkable life history as far as it has been discovered by Mr. Dod. He also showed imagines of three species of *Ogyris* which are also ant-feeding *Lycænids*, about which, however, less is known at present. Mr. H. Willoughby Ellis, two drawers of *Carabidæ*, including the *Anisodaetylina*, *Pterostichina*, and *Harpalina*, amongst which were various rare and interesting species. They were shown partly in order to illustrate his new methods of carding, &c., every specimen being carded separately to facilitate examination. Mr. A. H. Martineau, several pupæ of a wasp from Mexico, which had been attacked by a large fungus, apparently a species of *Cordiceps*. It grew out from between the prothorax and mesothorax, splitting the latter. He remarked that it was extraordinary that the insects should have reached the pupal stage with such a foe inside. —COLBRAN J. WAINWRIGHT, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *February 4th*, 1903.—Professor E. B. POULTON, M.A., D.Sc., F.R.S. (President), in the Chair.

The President announced that he had appointed the Rev. Canon Fowler, M.A., D.Sc., F.L.S., Professor Raphael Meldola, F.R.S., F.C.S., and Dr. David Sharp, M.A., F.R.S., F.L.S., as Vice-Presidents for the Session 1903—1904.

Mr. T. Ashton Lofthouse, of the Croft, Linthorpe, Middlesbrough, was elected a Fellow of the Society.

Dr. T. A. Chapman exhibited two male specimens of *Orina tristis*, var. *smaragdina*, taken at Pino, Lago Maggiore, on May 30th, 1902, still alive ; and living larvæ of *Crinopteryx familiella*, second generation, bred from the egg at Reigate, the parent having been taken at Cannes in February, 1901. The Rev. F. D. Morice exhibited, with drawings of the abnormal parts, a hermaphrodite of *Eucera longicornis*, Linn., showing one ♂ antenna normal, and the other remarkably shortened and with the joints greatly dilated ; the clypeus and labrum one half white (the ♂ character), and the other half black as in the ♀. In the abdomen and legs the ♀ character predominated, but one half of the apical parts and genitalia were of the ♂ character. In a discussion on hermaphroditism which followed, Dr. Sharp stated that Father Wasmann had announced the discovery that in certain Dipterous parasites of Termites the individual commences imago life as a male and ends as a female—a phenomenon entirely new to entomology, though paralleled in some other classes. Mr. R. McLachlan, F.R.S., a living example of *Chrysopa vulgaris*, Selind., taken by Dr. Chapman in his house at Reigate. The primary object of the exhibition was to show the manner in which this species, which is ordinarily bright green, assumes a brownish colour, the abdomen being often marked with reddish spots in hibernating individuals. Mr. W. J. Lucas submitted specimens of *Miris calceatus*—and seeds of a grass, swept up together by Mr. W. J. Ashdown on the canal side near Byfleet on July 14th



1902. The similarity of form and colouring constituted a probable case of protective resemblance. Major Neville Manders, two specimens of an undescribed species of *Atella* from Ceylon; and remarked that it was a very local insect, and only found in the Nitre Cave district, one of the localities most remote from civilization in the island. It was probably a well-marked local race of *A. Alcippe*. Mr. F. B. Jennings, British specimens of *Hemiptera-Heteroptera*, viz.:—two females of *Drymus pilipes*, Fieb., a rare species of the family *Lygaeidae*, which were found among dead leaves on a hillside near Croydon in September, 1901; and the black aberration of *Miris laevigatus*, L., recorded by him in the Ent. Mo. Mag. for 1902, p. 224. The species of *Miris* and the allied genus of *Capsidae*, *Megaloceraea*, are ordinarily grass-green or pale yellowish. Mr. H. J. Elwes, F.R.S., two cases of arctic butterflies. The first contained specimens from a collection formed by Mr. David Hanbury on the arctic coast of North America, in the region where the Parry expedition was lost. Of the butterflies observed—fifteen species in all—two, including the *Colias Boothii* had not been taken since they were first described by Curtis sixty years ago. This species, in comparison with *Colias Hecla*, Lef., is undoubtedly distinct in both sexes, but it is most remarkable that the male in coloration and markings appears to approximate more closely to the characters usual in the females of other members of the genus. The collection contained nothing new, but included the rare and curious *Argynnis improba*, Butler, a remarkable aberration of *A. Chariclea*, Schn., in which the black netting marks were resolved into smeared black lines; *A. pales*, for the first time from this region, precisely similar to the form taken on the east of the Lena River in Siberia; and *Cænonympha tiphon*, closely resembling the form from Kamtschatka. The second case contained specimens from a collection made between Jakutsk and Verchojansk in north-eastern Siberia at about the same latitude, 67°, as the preceding exhibit. They included many species which occur in the western palaearctic regions, and most remarkable of all, *Neptis Lucilla*. *Parnassius Delius*, which Mr. Elwes said was the first *Parnassius* he had seen from within the Arctic Circle, and *Colias viluensis*, Mön., an insect peculiar to Siberia, showing remarkable female aberrant forms. Mr. C. O. Waterhouse gave an account of a nest of a bee, *Trigona collina*, recently received from Malacca. Specimens were exhibited, as were also males and a worker of the much smaller species, *Trigona ruficornis*, Smith, received at the same time from Singapore, and sent by Mr. H. N. Ridley. Mr. W. J. Kaye, two drawers containing Danaine, Ithomiine and Heliconiine species from British Guiana, all of similar coloration, and forming a Müllerian association with a black hind-wing. A diagrammatic table was shown with the exhibit, which included the following species—*Melinæa Crameri*, *M. mneme*, *M. egina*, *M. n. sp.*, *Ceratinia veritabilis*, *Ceratinia sp.*, *Mechanitis doryssus*; *Lycorea Ceres*, *L. pasinuntia*, *Heliconius vetustus*, *H. numata*, *H. sylvana*, *Eucides n. sp.*; and *Stalactis Calliope*.

The following papers were communicated:—"On the Hyspid Genus *Deilemera*, Hübn., by Colonel Charles Swinhoe, M.A., F.L.S." "An Account of a Collection of *Rhopalocera* made in the Anambara Creek in Nigeria, West Africa, by Mr. P. J. Lathy." "Some Notes on the habits of *Nanophyes Durieui*, Lucas, as observed in Central Spain by Mr. G. C. Champion, F.Z.S., and Dr. T. A. Chapman, M.D., F.Z.S., with a description of the larva and pupa by Dr. T. A. Chapman."



March 4th, 1903.—The President in the Chair.

Mr. Harry Eltringham, of Eastgarth, Westoe, South Shields, was elected a Fellow.

Colonel Bingham sent for exhibition specimens of *Diptera* and two *Aculeates* from Sikhim, showing in the banding of the wings and other characteristics a singularly beautiful case of mimicry. The Rev. F. D. Morice drew attention to the way in which the fly imitated with its tibia the tarsus of the bee. Mr. A. J. Chitty, specimens of *Atomaria rhenana*, Kr., taken by him out of some flood rubbish found near Lancing, probably the same locality where the beetle was discovered formerly by Dr. Sharp. He also exhibited a *Plinus*, apparently new to Britain, found in a granary in Holborn in 1893, where it had been probably introduced. Mr. W. J. Kaye, species of *Lepidoptera* from British Guiana, forming a Müllerian association in which all but one were day-flying moths, the exception being an Erycinid butterfly, *Esthemopsis sericina*. The moths, belonging to three families, included *Syntomidae*, *Agyrta micilia*, and *Euagra caestina*; *Hypsidæ*, *Iostola divisa*; *Geometridæ* (?), *Pseudarbessa decorata*.

Mr. C. O. Waterhouse read "Notes on the nests of Bees of the Genus *Trigona*;" Mr. G. A. Rothney communicated a paper on "The *Aculeate Hymenoptera* of Barrackpore, Bengal," and "Descriptions of eighteen new species of *Larridae* and *Apidae*, from Barrackpore," by Peter Cameron; and Colonel Charles Swinhoe communicated a paper "On the *Aganidae* in the British Museum with descriptions of some new species."—H. ROWLAND-BROWN, *Hon. Sec.*

## SOME NEW COLEOPTERA FROM THE CHATHAM ISLANDS AND NEW ZEALAND.

BY D. SHARP, M.A., M.B., F.R.S., &c.

The following descriptions are drawn from some specimens sent me to name from the Bremen Museum für Natur-Kunde. I found there were several new species of *Cilibe* among them, and as their description involved a comparison with the forms of the genus found on the mainland of New Zealand, I have described two or three species from there. They have been compared with Mr. Bates' types, now in the British Museum, of this difficult genus. It is a great pity that we do not know more of the Fauna of the Islands off New Zealand. From an article in the last Vol. of the New Zealand Institute we must fear it is only too probable that the prehistoric Fauna and Flora are in process of rapid diminution if not of complete extirpation. Mr. Cockayne says, Tr. New Zealand Inst., xxxiv, p. 245, "as I write, Mr. W. Jacobs sends me word that the previously inaccessible forest lying under the precipitous cliffs of the South Coast has been opened up to stock, and in consequence the last remnant of the Chatham Island Forest will soon be a thing of the past."

Two of the new species are from Stephen's Island in Cook's Strait. If the resources of New Zealand do not permit the scientific authorities of the Colony to make an exploration of the mainland, they might surely take in hand the investigation of some of these outlying islands while they are still in a fairly natural state. That important results would be obtained by a thorough exploration is rendered more than probable by the discoveries Professor Schauinsland has made in his flying visit.

I have to thank the Professor for allowing me to retain specimens of the species I have described, and for presenting me with an example of the rare Longicorn *Ochrocydus huttoni*, Pasc., which he found at French Pass.

CILIBE MAJOR, *sp. nov.*

*Major, subdepressa, nigra, opaca, densissime punctata, elytris ecostatis.*

*Long. 24—26 mm.*

Allied to *C. opacula*, Bates, readily distinguished by the much larger size. The thorax is very broad, very slightly sinuate at the sides behind, and with the base only very slightly prolonged backwards at the hind angles. In other respects the two are extremely similar. The punctuation in *C. major* is quite as dense, and there is no trace of any smoothness on the disc of the thorax.

*C. opacula* itself consists of several varieties or races about the distinctness of which Mr. Bates entertained some doubt. The above distinctions are from the form Mr. Bates considered to be true *opacula*. The form to which *C. major* is nearest is from Christchurch, N. Z., and is about 18 mm. long. It has the thorax shaped like that of *C. major*, i. e. considerably straighter across the base than it is in typical *C. opacula*.

Stephen's Island, Cook's Strait. Prof. Schauinsland.

CILIBE SCHAUINSLANDI, *sp. nov.*

*Piceo-nigra, subdepressa, omnium densissime punctata, peropaca; elytris obsolete subsulcatis.*

*Long. 14½—16 mm.*

Closely allied to *C. opacula* and *C. otagoensis*, but with denser and finer sculpture of the upper surface than in any other species of the genus, and therefore duller. The thorax is distinctly narrower in front, so that the prominent front angles or lobes are rather narrower than they are in the allies; the sides are very little sinuate; the base on each side slopes backwards, so that the hind angles are distinctly acute; the punctuation on the disc is distinctly coarser and more scanty, but the surface is not at all shining. The sides of the elytra are but little explanate behind, but are more distinctly so in front, they have no costation at the base, but the faint longitudinal grooving of the surface is more distinct than it is in any of the varieties I have seen of *C. otagoensis*. The structure of the front tibiae is much the same as that of *C. opacula*.

Stephen's Island.

Prof. Schauinsland found three individuals of this species, but one of them has unfortunately lost the head and thorax.

*CILIBE SUBCOSTATA, sp. nov.*

*Nigra vel picea, minus depressa, fortiter sculpturata, opaca, elytris evidenter subsulcatis.* Long.  $13\frac{1}{2}$  mm.

This is distinguished from all the other species by the peculiar sculpture of the elytra, which however is only an exaggeration of what we find in some other forms. The front angles of the thorax are much produced and the sides are much explanate; their margins a little sinuate, the hind angles much produced backwards and markedly acute; the punctuation at the sides is very dense, on the disc it is scanty, but the surface is not in the least shining. The elytra are rather short, and have a vague costation, the very slightly elevated ribs are separated by coarser punctures; this sculpture strongly sets off, and makes evident, the ribs.

Chatham Island.

Prof. Schauinsland found a small series of this species. It is nearest allied to *C. pascoei*, Bates, of Pitts Island, a species which was also met with there by the German traveller. *C. pascoei*, is however, rather more elongate and less convex in form, and with the sculpture of the elytra different, there being merely traces of the longitudinal ribs. Prof. Schauinsland's specimens are intensely black, being considerably darker in colour than Mr. Bates' type. I have dissected the sexes of *C. subcostata* and do not find any external marks to distinguish them.

*CILIBE TARSALIS, sp. nov.*

*Lata, nigerrima, subdepressa, densissime punctata, opaca, pedibus crassioribus, tarsis subtus densius spongiosis, anticorum articulo primo leviter dilatato.* Long. 20 mm., lat. 10 mm.

I have seen only one specimen of this species. I received it a few years ago from Mr. Suter. It is labelled in the handwriting of Capt. Thos. Broun "*Cilibe opacula*," Bates, Albury. Though very similar to that species, it differs in a well-marked manner by the structure of the feet, and though this may be peculiar to the male it is sufficient to differentiate the form from *C. opacula*. It is a little broader in proportion to the length, the thorax is rather more transverse and less narrowed in front and the head markedly broader. The punctuation is much the same as it is in *C. opacula*. The tibiae are slightly shorter and thicker, and they have only an indistinct external pre-apical angle; the thickening of the basal joint of the front feet though slight is perfectly definite, and I can find nothing to correspond to it in any other species.

Albury, New Zealand.

I have a specimen given to me by the late C. M. Wakefield, who found it in the Peel Forest in March, 1874. It was submitted by me

many years ago to Mr. Bates, who returned it with the remark "appears distinct from typical *opacula* and *otagoensis*." This individual, I believe, is a female of *C. tarsalis*. The tarsal character is absent, but in other respects it agrees with the type, except that the legs are a little thinner, and the thorax not quite so broad.

If the two individuals are really, as I suppose, one species, it may be distinguished from *opacula* by the slightly greater width in proportion to the length; by the eye being a little larger in the longitudinal axis, and by the structure of the male feet.

I do not know where Albury is. Peel Forest is "in Canterbury," but I do not know more than this.

*CILIBE VELOX, sp. nov.*

*Angusta, picca, dense punctata, opaca, antennis pedibusque elongatis; elytris subsulcatis, minus fortiter punctatis; tibiis anterioribus dente externa pre-apicali discreta.*

*Long.* 12½. *lat.* 5½ mm.

A very distinct species of the *C. otagoensis* group, which I describe from a single male. The strong denticulation of the front tibiæ reminds one of *C. tibialis*, from which in some other respects the species is very different. The appendages are unusually long for the size of the insect, but probably in the female this will not be conspicuous, as the legs are usually longer in the male sex of *Cilibe*. Less convex than *C. tibialis*, and with the sculpture very much more effaced, the upper surface not in the least shining, and the thorax almost completely destitute of basal impressions though formed as in *C. tibialis*; there is no groove along the sides, and the hind angles are acute, as in that species. The elytra are narrow, more attenuate and acuminate behind than they are in *C. tibialis*, with only narrow lateral groove, with the surface distinctly subsulcate, and the punctuation fine, subeffaced.

Christchurch, New Zealand.

*CILIBE LEWISIANA, sp. nov.*

*Suboblonga, parum convexa, piceo-nigra, haud omnino opaca, prothorace dorso subtiliter punctato et nitido; elytris densissime punctatis, subopacis.*

*Long.* 14½ mm.

This can only be compared with *C. otagoensis*, to which it is similar in form. *C. lewisiana* is however smaller and is easily distinguished by the comparatively smooth pronotum, which is less densely and more finely punctured. The front angles of the thorax are not much produced; the sides are nearly straight behind, scarcely at all narrowed or sinuate, but the base on each side slopes back a little to the angle, which is therefore slightly acute. The explanation of the sides of the elytra is but slight, their sculpture is very dense, but not so excessively crowded as it is in *C. otagoensis*, and the surface is not so completely dull.

I have seen eighteen examples of this species, taken by Mr. J. H.

Lewis, of the Public Works Office, after whom I have named it. These specimens do not vary much, and I think the species is distinct, though it has no salient character.

Otago, Wedderburn. J. H. Lewis.

*CILIBE MERIDIONALIS, sp. nov.*

*Angusta, subtiliter sculpturata, opaca, picco-rufa, antennis, palpis pedibusque dilute rufis.*  
*Long. 11, lat. vix. 5 mm.*

This small form comes nearest to *C. huttoni*, from which it is distinguished by its shape, being narrower in front, so that the thorax is less transverse, and by the more effaced sculpture of the elytra, which, too, have only very indistinct traces of grooves or costæ. The front angles of the thorax are but little produced; the sides are a little sinuate, and the hind angles acute; the punctation is fine, not dense, a good deal more scanty on the disc, where the surface is perceptibly shining. The elytra are but little explanate at the margins, and are remarkable on account of their comparatively fine sculpture, the punctures being quite small and shallow; the interstices are larger than the punctures, and they bear some excessively minute shining slightly raised asperities or granules. The legs are rather long, the outer angle of the front tibia not in the least spinose. The sculpture of the ventral segments is quite fine, but less effaced than it is in *C. huttoni*. The metasternum in the middle in front is slight convex or protuberant, and is punctate there.

Waikawa, in the extreme south of New Zealand. Prof. Schauinsland, two specimens.

I have specimens of a form allied to this, found at Manawatu, in the South of the North Island. They appear to me to be nearer to *C. huttoni* than to *C. meridionalis*, and I treat them at present as a variety of the Otago species, *C. huttoni*.

*ZORION OPACUM, sp. nov.*

*Fusco-testaceum, supra submetallico-nitens, serieco-subopacum; antennis pedibusque testaceis, his femoribus basi excepta rufo-obscuris, illis fusco-annulatis; elytro singulo ante medium fascia pallida transversa marginem lateralem fere attingente.*  
*Long. 4—5 mm.*

This comes very near to *Z. minutum*, but is distinguished by the peculiar pallid suffused colour, and the silky dullness of the surface. The thorax, instead of being polished, is dull and covered with a slight sculpture—a sort of minute wrinkling of the surface. The elytra are rather longer than in the other species.

Chatham Islands. Prof. Schauinsland, three specimens.

The British Museum collection includes a specimen of this species said to be from Otago. This locality I think very doubtful.

*XYLOTOLES SCHAUINSLANDI, sp. nov.*

*Fusco-rufus, supra viridescens, nitidus, antennis pedibusque rufis; elytris tricostatis, costis ad apicem fere ductis, interstitiis irregulariter interruptim costatis.*  
*Long. 10 mm.*



This species comes very naturally between *X. traversi* and *X. costatus*. It is not half the size of the latter; but is a little larger than *X. traversi*, more elongate, with the sculpture more developed and the costation continued near to the tip. Of the forms found on the mainland it is perhaps nearest to *X. rugicollis*, but it is very different in colour and the elytra are singly rounded at the tip. The thorax is elongate and subcylindric and bears two transverse channels, otherwise it is very indistinctly sculptured. The scutellum is covered with pallid pubescence. The elytra have each an elevated rib running along the suture, and outside this three others, the space between bearing much coarse irregular sculpture; the third costa is itself divided behind the shoulder so as to fork somewhat, and form in fact two costæ. The ventral segments have each a conspicuous spot of yellow pubescence at the side.

The four specimens found by Prof. Schauinsland differ but little, and the British Museum collection has two others.

Chatham Islands. Prof. Schauinsland.

*XYLOTOLES ABNORMALIS, sp. nov.*

*Minutus, brevis, testaceus, pallidus, tomentosus; thorace fortiter transverso; corporis latere longitudinaliter fuscescente.* Long. 5 mm.

This minute *Lamiid* looks like a *Hybolasius*, but as it is flightless I place it in *Xylotoles* where it will come near to *X. Huttoni*. The front of the head is very low, and the mouth much inflexed. The antennæ have the third and fourth joints very elongate, the fourth a little the shorter but quite twice as long as the fifth; from this to the end each is slightly shorter than its predecessor. The thorax is scarcely so long as broad, infusate at the sides and across the middle. The after body is short, the elytra covered with minute tomentum which allows, however, numerous small pits to be seen; they are pallid, but at each side there is a large irregular dark patch which beyond the middle approaches near to the suture. Under-surface infusate. Femora short and thick, yellow, with dark marks.

Chatham Islands. Prof. Schauinsland, two specimens.

*ALDONUS CHATHAMENSIS, sp. nov.*

*Ferrugineus vel piceus, setis erectis numerosis superne vestitus, haud squamosus, rude sculpturatus; subtus setosus, inter setas squamis perpaucis munitus.* Long.,  $7\frac{1}{2}$ —13 mm.

Distinguished from *A. hylobioides* and all the other species ascribed to the genus by the absence of scales from the upper surface. The rostrum is longer than it is in *A. hylobioides*; it bears fine erect hairs, but, in consequence of the absence of scales its coarse sculpture can be distinctly seen. Thorax very rough, with tubercular sculpture, with fine, short, erect hairs, and with still shorter, very slightly curved, thicker, more pallid setæ, which represent the squamosity that is so remarkable in the other species. The elytra are rather deeply striate, and the striæ have very large punctures, separated only by short intervals one from the other.

Chatham Islands. Prof. Schauinsland.

Cambridge: February, 1903.

REMARKS ON A SUPPOSED NEW GENUS OF  
*CLYTHRIDÆ* (COLEOPTERA, PHYTOPHAGA) FROM MADAGASCAR,  
 DESCRIBED BY M. FAIRMAIRE.

BY MARTIN JACOBY, F.E.S.

In "Notes from the Leyden Museum," 1901, vol. xxiii, M. Fairmaire described a new Phytophagous genus (*Arsoa*) from Madagascar, which he placed in the family *Clythridæ*, and near *Miopristis*, on account of the extremely elongate anterior legs of one of the species. In reading Fairmaire's description, in which the antennæ are given as long and slender, it must at once strike every one acquainted with *Coleoptera* that *Arsoa* cannot possibly belong to the *Clythridæ*, in which family the antennæ are always short and the joints transverse or serrate. In fact, no family of *Phytophaga* is easier to recognise than the *Clythridæ*. As the British Museum has received co-types of Fairmaire's species derived from the same sources as his, I have been enabled to examine the insects, and my surprise was great when I found that both species described had nothing to do with the *Clythridæ*, but are members of the family *Eumolpidæ*, where Mr. Gahan had rightly placed them, without having seen Fairmaire's description. The proper place is amongst the *Edusinae*, near *Abirus*.

London: April, 1903.

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HYMENOPTERA COLLECTED BY COLONEL YERBURY IN  
 HEREFORDSHIRE, 1902.

ACULEATA BY EDWARD SAUNDERS, F.R.S.;

CHRYSIDIDÆ AND TENTHREDINIDÆ BY REV. F. D. MORICE, M.A., F.E.S.;

ICHNEUMONIDÆ BY CLAUDE MORLEY, F.E.S.

The fauna of Herefordshire having been very little studied, Col. Yerbury during the months he was staying in the county last summer collected insects with the intention of forming a nucleus for a County List. In the *Hymenoptera* he met with very considerable success, especially among the *Aculeata*. Of this section 85 species were obtained, and amongst them several which are local and of interest on account of the locality, including one (*Psen concolor*, Dhlb.) which has only once been previously taken in this country; of this last Col. Yerbury met with a ♂ and ♀, the male at Tarrington, 18.6.02, and the female at Tram Inn, 2.8.02. The former record was from Byfleet, Surrey, where Mr. Morice took a ♀ on June 14th, 1897. Other species of rarity in the collection are *Sapyga clavicornis*, L.,

*Calicurgus hyalinatus*, F., *Agencia hircana*, F., *Crabro capitosus*, Shuck., *Odynerus lævipēs*, Shuck., *Halictus lævigatus*, K., and *pauvillus*, Schk., *Andrena bucephala*, Steph., *Osmia pilicornis*, Sm., and *leucomelana*, K.

Among the *Tenthredinidæ*, *Cyphona geminata*, Gmel., *Emphytus tibialis*, Klug, *Tenthredopsis fenestrata*, Kuw., are pointed out by Mr. Morice as of rarer occurrence.

I am much indebted to Colonel Yerbury for kindly giving me the specimens he captured.—E. S.

#### ACULEATA.

*Lasius flavus*, De G., ♀, Clifford Castle, 27.8.02. *Myrmica rubra*, L., r. *seabrinodis*, ♀, Tarrington, 27.8.02. *Tiphia minuta*, v. d. L., ♂, Pembridge, 15.7.02. *Sapyga clavicornis*, L., ♂, Tarrington, 3.6.02. *Pompilus spissus*, Schiödt, 2 ♀, Tarrington, 11 & 14.7.02; *ungicularis*, Thoms., 1 ♀, Tarrington, 20.6.02. *Salix fuscus*, L., 5 ♀, Tarrington, 28 & 31.5.02, Ledbury, 21.6.02; *exaltatus*, Fab., 2 ♀, Tarrington, 3 & 26.8.02; *pusillus*, Schiödt, ♂, 2 ♀, Tarrington, 15.8.02, Cusop, 20.8.02. *Calicurgus hyalinatus*, Fab., ♂, Tarrington, 18.6.02. *Agencia hircana*, Fab., ♂, 2 ♀, Tarrington, 6, 10, 15.8.02. *Trypoxylon clavicernum*, Lep., Tarrington, Cusop, Woolhope, 26.7 to 26.8.02; *attenuatum*, Smith, ♂, Tarrington, 15.8.02. *Passolæcus insignis*, v. d. L., ♀, Tram Inn, 23.7.02. *Psen concolor*, Dhlb., ♂, Tarrington, 18.6.02, ♀, Tram Inn, 2.8.02; *pallipes*, Panz., ♀, Tarrington, 18.7.02. *Pemphredon lugubris*, ♂, 2 ♀, Tarrington, 11.7, 16.8.02, Ross, 19.6.02; *Shuckardi*, ♂ ♀, Tarrington, 2.6, 14.7.02. *Gorytes mystaceus*, L., ♂, Tarrington, 17.6.02, ♀, Woolhope, 7 & 6.02. *Crabro clavicipes*, L., ♂, Cusop, 26.7.02; *leucostomus*, L., ♂, Ross, 19.6.02, 2 ♀, Tarrington, 14.7 & 22.8.02; *capitosus*, Shuck., ♂, Ross, 19.6.02; *podagricus*, v. d. L., ♀, Tram Inn, 2.8.02; *varius*, Lep., ♂, Tarrington, 17.7.02, ♀, Cusop, 26.7.02; *anzius*, Wesm., ♂, Tarrington, 2.6.02; *elongatulus*, Lep., ♂, Tarrington, 5.8.02; *albilabris*, Fab., ♀, Tarrington, 22.8.02; *vagus*, L., ♂ 3, Cusop, 26.7 & 20.8.02, Tarrington, 11.7.02; *canifrons*, Thoms., ♀, Tarrington, 15.8.02; *dimidiatus*, Fab., 2 ♂, Cusop, 11.6 & 26.9.02, ♀, Tarrington, 5.8.02. *Odynerus melanocephalus*, Gmel., ♀, Tarrington, 18.7.02; *lævipēs*, Shuck., ♂, Tarrington, 18.7.02; *callosus*, Thoms., ♂, Ashpeston, 1.9.02; *parietinus*, L., 3 ♀, Tarrington, 6.8.02, Cusop, 20.8.02; *trifasciatus*, Oliv., ♂, Tarrington, 17.8.02; *gracilis*, Brullé, ♂, Ledbury, 19.7.02; *sinuatus*, Fab., ♀, Woolhope, 24.8.02. *Prosopis communis*, Nyl., ♂ ♀ many, Tarrington, Woolhope, Ashpeston, Tram Inn, 25.5 to 1.9.02; *confusa*, Nyl., ♂ 3 ♀, Tarrington, 8.02. *Sphecodes pilifrons*, Thoms., ♀, Tarrington, Ledbury, 16.6 to 18.9.02; *similis*, Wesm., 1 ♂ 4 ♀, Tarrington, Woolhope, Ashpeston, 13.7 to 15.9.02. *Halictus rubicundus*, Chr., 1 ♀, Tarrington, 13.9.02; *leucozonius*, Schr., 2 ♀, Tarrington, Ledbury, 6.02; *zonulus*, Sm., 2 ♂ 2 ♀, Tarrington, 8 & 9.02; *4-notatus*, Kirb., ♂ ♀, Tarrington, 22.8 & 26.9.02, ♀, Hereford, 13.9.02; *lævigatus*, Kirb., ♂ 3 ♀, Woolhope, 8 & 9.02, Tarrington, 6.02; *cylindricus*, Fab., ♂ ♀ several, Tarrington, Tram Inn, Woolhope, Hereford, 10.8 to 15.9.02; *albipes*, Kirb., 2 ♂, Tarrington, Tram Inn, 8.02, ♀, Much Markle, 5.02; *pauvillus*, Schk., 2 ♂, Tarrington, 8.02, 3 ♀, Ledbury, 6.02; *subfasciatus*, Nyl., 3 ♂, Tarrington, 16.8.02, 1 ♀, Hereford, 1 ♀, Much Markle, 5.02; *villosulus*, Kirb., ♂, Tarrington,

8.02; *punctatissimus*, Schk., ♂ ♀, Tarrington, 5.8.02; *Smeathmanellus*, Kirb., ♂, Tarrington, 8.02; *leucopus*, Kirb., ♀, Tarrington, 7.02; *tumulorum*, Linn., 3 ♂ ♀, Tarrington, 8.02, ♀, Ledbury, 6.02. *Andrena albicans*, Kirb., 3 ♀, Tarrington, 5 & 6.02; *rosæ*, Panz. (r. *Trimmerana*), ♂, 2 ♀, Tarrington, 6.02; *nilida*, Fourc., ♂, Much Markle, ♀, Tarrington, 5.02; *fulva*, Schr., 2 ♀, Tarrington, 5 & 6.02; *nigroænea*, Kirb., ♂ ♀, Tarrington, 6.02; *facata*, Sm., ♂ ♀, Tarrington, Tram Inn, Cusop, Much Markle, 5 & 6.02; *bucephala*, Steph., ♀, Tarrington, 5.6.02; *cingulata*, Fab., ♂ ♀, Tarrington, 6.02, ♀, Hereford; *chrysosceles*, Kirb., 3 ♂, Tarrington, 1 ♀, Woolhope, 2 ♀, Much Markle, 5 & 6.02; *labialis*, Kirb., 7 ♂, Tarrington, Tram Inn, ♀, Much Markle, 5 & 6.02; *nana*, Kirb., 3 ♀, Malvern Hills, 6.02; *minutula*, Kirb., 3 ♀, Tarrington, 6 & 7.02; *Wilkella*, Kirb., ♂, Malvern Hills, ♀, Tarrington, 6.02. *Panurgus calcaratus*, Scop., ♀, Tarrington, 16.8.02. *Nomada succincta*, Pz., 2 ♂, Tarrington, 7 & 8.02; *alternata*, Kirb., 2 ♂ 8 ♀, Tarrington, Hereford, Cusop, Much Markle, 5, 6, 8 & 9.02; *rusticornis*, Kirb., 5 ♂ 3 ♀, Tarrington, 5, 6 & 8.02; *bifida*, Thoms., ♂, Tarrington, ♀, Cusop, 5 & 6.02; *Fabriciana*, L., ♀, Tarrington, 2.8.02; *flavoguttata*, Kirb., 2 ♂, Tarrington, 8.02, Much Markle, 5.02. *Chelostoma florissomne*, L., 2 ♂, Tarrington, 6.02. *Megachile Willughbiella*, Kirb., ♂, Tarrington, 5.8.02. *Osmia rufa*, L., ♂, Tarrington, 5.02, 3 ♀, Ross, 6.02; *pilicornis*, Sm., 3 ♀, Tarrington, 5 & 6.02; *leucomelana*, Kirb., ♀, Tarrington, 8.02. *Anthidium manicatum*, L., ♀, Tarrington, 8.02. *Eucera longicornis*, L., 5 ♀, Much Markle, 5.02, Tarrington, 7 & 8.02. *Anthophora pilipes*, 2 ♀, Ross, Much Markle, 5 & 6.02. *Bombus agrorum*, F., 1 ♀, Woolhope, 9.02. *Apis mellifica*, L., generally distributed.

#### CHRYSIDIDE.

*Chrysis ignita*, L., Cusop, Tarrington; *cyanea*, Tarrington.

#### TENTHREDINIDÆ.

*Macrocephus satyrus*, Pz., ♂, 29.5.02; *pygmaeus*, L., ♂, Woolhope, 10.6.02. *Abia sericea*, L., ♂ ♂, Tram Inn, 23.7 to 25.8.02, ♀, Shobden, 15.7.02. *Cyphona geminata*, Gmel., ♂, Cusop, 11.6.02. *Pteronus polyspilus*, Först., ♂, Tarrington, 10.8.02. *Nematus abdominalis*, Pz., ♂, Tarrington, 31.5.02; *luteus*, Pz., ♀, Woolhope, 10.6.02; *acuminatus*, Thoms., ♀, Much Markle, 27.5.02. *Holcocneme lucida*, Pz., ♀, Ross, 29.6.02. *Biennocampa tenuicornis*, Klg., ♂, Much Markle, 27.5.02; *pusilla*, Klg., ♂, Tarrington. *Selandria serva*, F., ♂, Tarrington, 3.6.02; *morio*, F., ♂, Tarrington, 14.7.02. *Strongylogaster cingulatus*, F., ♀, Tarrington. *Eriocampa ovata*, L., ♀, Tarrington, 14.6.02. *Emphytus tibialis*, Klg., ♀, Tarrington, 18.8.02. *Dolerus ariceps*, Thoms., ♂, Tarrington, ♀, Shobden, 15.7.02. *Rhogogastera aucupariæ*, Klg., ♂, Tarrington, 15.5.02. *Tenthredopsis fenestrata*, Knw., ♂, Tarrington, 9.6.02. *Pachyprotasis rapæ*, L., ♀, Tarrington, 12.6.02. *Macrophya albicincta*, Schrnk., ♀, Much Markle, Tarrington, 27.7.02; *annulata*, Geoff., ♀, Ledbury, 21.6.02. *Allantus temulus*, Scop., ♀, Tarrington, 2.6.02; *maculatus*, Fourc., ♂, Woolhope, 10.6.02. *Tenthredo atra*, L., ♂, Cusop, 11.6.02, ♀, Tarrington; *livida*, L., ♂ ♀, Cusop, 11.6.02; *mesomela*, L., ♂ ♀, i. c. Malvern Hills, 8.6.02.

#### ICHNEUMONIDÆ.

*Barichneumon chionomus*, Wesm., ♂, Tarrington, 26.8.02; *vacillatorius*, Grav., ♂, Tarrington, 11.8.02. *Ichneumon emancipatus*, Wesm., ♀, Cusop, 20.8.02;

*confusorius*, Grav., ♂, Pembridge, 15.7.02. *Flatylabus rufus*, Wesm., 2 ♀, Woolhope, 14-15.9.02. *Alomyia debellator*, Fab., ♂, Cusop, 11.6.02. *Cryptus minator*, Grav., ♂, Much Markle, 27.5.02; *tuberculatus*, Grav., ♂, Pembridge, 15.7.02. *Stylocryptus vagabundus*, Grav., ♀, Tarrington, 18.7.02. *Paniscus testaceus*, Grav., ♀, Ledbury, 12.7.02. *Anomalon (Agrypon) flaveolatum*, Grav., 2 ♀, Tarrington, 11.8.02, Ledbury, 4.6.02. *Atractodes vestalis*, Hal., ♂, Tram Inn, 29.7.02. *Perilissus filicornis*, Grav., ♀, Much Markle, 27.5.02. *Tryphon signator*, Grav., ♀, Tarrington, 9.6.02. *Ezochus coronatus*, Grav., ♀, Tarrington, 22.8.02. *Bassus nemoralis*, Holmgr., ♂, Tarrington, 17.7.02; *signatus*, Grav., ♀, Tarrington, 10.8.02. *Lissonota bellator*, Grav., ♂, Pembridge, 15.7.02. *Smicra sispes*, Linn. (*Chalcididæ*), Tarrington, 10-13.7.02.

## HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH TENTHREDINIDÆ, &c. (3).

BY THE REV. F. D. MORICE, M.A., F.E.S.

Apart from alar neururation, the following are among the most useful characters for determining Saw-flies:—

1. The outlines of the head as seen from above: *e. g.*, to what extent it projects or is excavated at various points near the antennæ; whether its sides converge from the eyes to the occiput, or no; &c., &c.

FIG. 6.



a. *Allantus*



b. *Tenthredo*

2. The development of depressed or elevated spaces on the head, sulci, carinae, tubercles, a more or less distinct "area pentagona," deep impressions bounding the "vertical area," "furrowed" and "margined" tempora, &c.

3. The proportions of the vertical area; and of the genæ (*i. e.*, the distance between the eye and the mandible).

4. The apical outline of the clypeus—deeply excised, slightly and broadly emarginate, truncate,\* &c.

FIG. 7.



a—clypeus (excised) of a *Pteron*.



b—clypeus (truncate) of a *Lygæonematus*.



c—clypeus (slightly and broadly emarginate) of a *Tenthredopsis*.

5. The structure of the antennæ, *e. g.*, dilatations of certain joints; comparative length and breadth of ditto; general shape, as *clavate* (clubbed), *filiform* (threadlike), *setiform* (tapering), *serrate* (apices of joints projecting), &c.

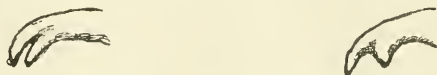
6. The form of the claws (a character not always easy to see, but often im-

\* Mr. Cameron regularly calls a truncate clypeus "*transverse*." But surely that word denotes the reverse, not of "excised" or "emarginate," but of "elongate" or of "longitudinal."



portant). Their apices are always sharp and somewhat incurved; and on the inner side of this tooth-like or rather horn-like termination is generally another somewhat similar process, *either* sub-adjacent to it and running more or less in the same direction, or projecting from it nearly at right angles, running therefore not alongside of but away from it. In the latter case it is often very difficult to see the interior process at all; it gets foreshortened, or hidden away among the hairs, &c. The presence or absence of the former condition, however, can generally be recognised pretty easily after a little practice, by examining the claw with a fairly strong lens, holding it meanwhile in two or three different positions against a lighted background. When the apex of the claw and the process are adjacent and subparallel, the claw is called "bifid." In the other case it is said to have a "subapical tooth." But the distinction is not always so well marked as in the following figure.

FIG. 8.



a, Claw (bifid) of a *Pamphilus*.      b, Claw (with subapical tooth) of a *Lyda*.

7. Thomson makes a good deal of use of the "*parapsides*," i. e., the dividing furrows between the middle and side lobes of the mesonotum (as to their "dilatation behind," &c.). Personally, I must own, I have not found these characters helpful; but others may do so.

8. Punctuation, and the finer sculpture (generally) of all parts of the body, including the *pleuræ*, are most important for specific determinations.

9. In many females the form of the saw-sheath, viewed both above and from the side, gives excellent characters. Care should be taken never to obliterate or conceal these characters while "preparing" specimens, especially *Doleriæ* and *Nematidæ*. Also in determining *Tenthredopsis* species, both male and female, and in many other genera, the ventral side of the abdomen requires most careful examination.

10. An important though minute structural character, first, I believe, employed by Thomson and since by Konow for arranging the *Blennocampidæ*, is the following. In some genera the mesosternum (or mesopleura + mesosternum, for in these cases the two are hardly to be distinguished) is simply convex

FIG. 9.



Mesothorax *præsternis*\*  
*discretis* of a *Tomostethus*.  
thus (lateral view).

right up to the sulcature, which separates it from the prothorax: in others that part of it which is adjacent to the prothorax is abruptly depressed and separated from the remaining area by a definite sulcus, as in fig. 9. According to the presence or absence of this latter character a mesothorax is said to have or not to have distinct "præsterna"

11. The outline of the scutellum, its greater or less gibbosity, and the manner in which it is divided from the mesonotal "lobes," occasionally have to be examined, as well as in many cases its punctuation.

\* The "præsternum" is diagrammatically shaded, therefore more conspicuous than in nature.

Care should therefore be taken by collectors not to "pin" through the scutellum, nor through the impressions at its base. Perhaps the most harmless place for a pin is *in the middle of one of the side lobes of the mesonotum*—then at least a full half of the thorax is left undamaged.

These, I believe, are the chief characters to which we shall have to refer hereafter. It is obvious that many of them cannot be seen if the specimens are "carded" with outspread wings hiding the pleuræ, unguiculi clogged with gum, ventral surface close against the card, clypeus inaccessible to a Coddington, &c., &c. To me personally it appears that all elaborate and artificial methods of "setting" serve only to make insects more difficult of determination—at any rate in the case of *Hymenoptera*. All that I ever do myself is to separate the wings a little, usually by blowing on them, and to see that at least one leg displays its claws sufficiently. But I fear it will need a more persuasive pen than mine to induce collectors universally to abandon the methods they are used to. I cannot, however, refrain from pointing out, that insects *laid down* on a short and pliable pin are in great danger of accidents to legs, antennæ, &c., if labels are attached beneath them; and that they are also especially difficult to deal with either by means of a Coddington or a compound microscope, as well as being peculiarly liable to accumulate dust, mould, &c., and to be attacked by mites and such like pests, even when they are left unstudied in the cabinet.

I come now to the question of classification.

The insects which we call Saw-flies (including *Sirex*, &c., among them), are known in Germany as Leaf-wasps (Blattwespen). Konow treats them as the third of the "Subordines" into which he divides the Ordo *Hymenoptera*, and gives to this Subordo the name *Chalastogastra*. He divides his Subordo into three Families—1, *Lydidae*, 2, *Siricidae*, 3, *Tenthredinidae*, and each of these again successively into subfamilies, tribes, genera, and species. For our limited fauna it may suffice, after this explanation of the system, to enumerate the *subfamilies* and *genera* under which our British Saw-flies should, according to Konow's views, be placed, and to give the names of *tribes* only in the case of one great subfamily (the *Tenthredinini*), which embraces a large number of tribes and the greater part of our native genera. (For a complete account of the matter, reference may be made to Konow's *Chalastogastra*, l. c., p. 119 of the "Monograph," p. 263 of the "Zeitschrift").

The Genera which I shall include in this List are all known to

me "by autopsy" as British; except a few marked †, of which I do not remember to have seen British specimens, but whose record as natives seems unimpeachable. I do *not* include a few genera (*Clavelaria*, *Megalodontes*, &c.), of which there are only ancient and in my opinion more than doubtful records. (See Cameron's remarks on this subject in his Monograph).

#### LIST OF BRITISH GENERA.

(Where a name with C. attached follows in brackets it is that employed in Cameron's Monograph).

Subfam. 1. LYDINI, *Lyda*, F., *Neurotoma*, Knw., *Pamphilus*, Latr.

(These 3 = *Pamphilus*, C.).

„ 2. CEPHINI, *Macrocephus*, Schlecht., *Janus*, Steph., † *Calamcuta*, Knw., *Astutus*, Pz.,\* *Cephus*, Latr., *Trachelus*, Jur.

(These 6 = *Cephus*, C.).

„ 3. XYELINI, *Xyela*, Dalm.

„ 4. XIPHIDRIINI, *Xiphidria*, Latr.

„ 5. SIRICINI, *Sirix*, Linn.

„ 6. ORYSSINI, † *Oryssus*, F.

„ 7. CIMBICINI, *Cimbeæ*, Oliv., *Trichiosoma*, Leach, *Abia*, Leach.

„ 8. ARGINI, *Arge*, Schr. (= *Ilylotoma*, C.), *Schizoceros*, ‡ Lep. (= *Schizocera*, C.).

„ 9. LOPHYRINI, *Lophyrus*, Latr.

„ 10. TENTHREDININI.

Tribe (a) NEMATIDES—*Cladius*, Ill., *Trichiocampus*, Htg., *Priophorus*, Latr. (these 3 = *Cladius*, C.), *Leptocercus*, Thoms. (= *Camponiscus*, C.), *Hemichroa*, Steph., *Dineura*, Dhlb. (= part only of *Dineura*, C.), *Cryptocampus*, Htg. (= *Eura*, C.). (The next 9, except *Croesus*, make up *Nematus*, C.). *Pontania*, Costa, *Pteronus*, Jur., *Amauronematus*, Knw., *Croesus*, Leach, *Holcoeneme*, Knw., *Nematus*, Jur., *Pachynematus*, Knw., *Lygeonematus*, Knw., *Pristiphora*, Latr., *Micronematus*, Knw.

(b) HOPLOCAMPIDES—*Phyllotoma*, Fall., † *Heptamelus*, Halid., *Eriocampoides*, Knw. (= part of *Eriocampa*, C.), *Hoplocampa*, Htg.

(c) BLENNOCAMPIDES—*Mesoneura*, Htg. (= *Dineura verna*, C.). The next 10 make up *Blennocampa*, C.). *Periclista*, Knw., *Parcophora*, Knw., *Ardis*, Knw., *Rhadinocerea*, Knw., *Phymatoceros*, Dhlb., *Tomostethus*, Knw., *Blennocampa*, Htg., *Scolioneura*, Knw., *Entodecta*, Knw., *Monophadnus*, Htg., *Pseudodineura*, Knw. (= part of *Dineura*, C.), *Kaliosysphinga*, Tischb. (? = part of *Fenusa*, C.), *Fenusa*, Leach, *Fenella*, Westw.

(d) SELANDRIADES—*Harpiphorus*, Htg., *Athalia*, Leach, *Selandria*, Kl. (The

\* Latreille had previously called another (fossorial) genus *Astutus*, but altered the name to *Astata* in his preface. Under these circumstances Konow holds that the name *Astutus* was not pre-occupied when Panzer adopted it, and must therefore be retained. It is a little awkward that there should have to be both an *Astutus* and an *Astata* among the *Hymenoptera*, but I accept Konow's judgment, though rather reluctantly.

‡ So Konow in litt. (xii, 1902). He has previously, with Thomson, called the genus *Cyphona*, Dhlb.

next 3 = *Strongylogaster*, C.). *Thrinax*, Knw., *Stromboceros*, Knw., *Strongylogaster*, Dhlb., *Eriocampa*, Htg. (= *Eriocampa ovata*, C.), *Pecilosoma*, Dhlb.\*—Thoms., *Emphytus*, Klg., *Taxonus*, Htg.

(e) **DOLERIDES**—*Dolerus*, Jur., *Loderus*, Knw. (included by C. under *Dolerus*).

(f) **TENTHREDINES**—*Sciopteryx*, Steph., *Rhogogastera*, Knw. (= part of *Tenthredo*, C.), *Tenthredopsis*, Costa, *Perineura*, Htg. (= *Synærema*, C.), *Pachyprotasis*, Htg., *Macrophya*, Dhlb., *Allantus*, Jur. (certain spp. included by C. in *Tenthredo* are removed by Knw. into this genus), *Tenthredo*, Linn. (= *Tenthredo* C. less the spp. removed to *Rhogogastera* and *Allantus*).

(The tribe named **TENTHREDINES** is used by Konow for reasons which he has kindly explained to me, so I retain it. But I think it a pity that the same word should be used for a tribe and also for a genus, and must regret that he did not rather call the tribe by some such name as **ALLANTIDES**).

The main points of difference between the above system and that of Cameron seem to be these.

(1). The general order is reversed. Konow ends with *Tenthredo*, with which Cameron begins.

(2). Konow breaks up into many new genera certain old ones (especially *Nematus* and *Blennocampa*) which Cameron on the whole keeps together.

(3). A few genera (*Dineura*, *Eriocampa*) are completely revised by Konow, the species formerly included in them passing not merely into different genera but into different tribes.

(4). The genus *Tenthredo* is re-defined, and a number of species separated from it, some passing into *Allantus*, others into *Rhogogastera*.

As to the advantages of these changes I desire to avoid as much as possible controversial matter in these papers. But I will venture to say that as to (1) Konow's arrangement is no arbitrary innovation, but follows the lines laid down by Thomson—probably the best systematic entomologist that ever dealt with the subject. As to (2), opinions will always differ about the precise point at which a group of species becomes a "genus," and I don't not that if (*c. g.*) Kohl or Handlirsch had classified these insects they would have made fewer genera out of the old "*Nematus*" than Konow has done. But, whether we choose to call them genera or groups, they are at least well-defined, and practically I find them far too helpful towards determining these puzzling insects to wish them done away with. While as to (3) and (4), I can feel no doubt whatever that the changes proposed—resting as they do on important, though previously scarcely noticed, points of structure—are not only desirable, but absolutely necessary and inevitable.

The characters which I shall now give for determination of these Genera are mainly taken from Konow's "Catalogus" of 1890 and several of his more recent Monographs (*Cephini*, *Lydini*, *Siricini*, &c.). But I must take sole responsibility for the manner in which they are here presented, as I have selected from among them, modified the

\* Dhlb. named it *Pecilostoma*—probably a misprint!

terms of their expression, and sometimes added to them, with perfect freedom. (My object being to facilitate the determination of British insects only, I have occasionally mentioned characters which though found in all our native representatives of a genus may not really be generic.) Some of the additional characters are taken from Thomson's *Hym. Scand.*, others from my own observations: but my "material" is so limited that I have had to be cautious about trusting to it.

I hope that, aided by the explanations and figures previously given, collectors will be able to make use of my Tables, though no doubt occasionally abnormal specimens will occur which will refuse to be determined satisfactorily by means of them.

### NEW SPECIES &c., OF *APHIDÆ*

CAPTURED BY MR. G. C. CHAMPTON IN SPAIN IN 1891 AND 1892.

BY PROF. O. M. REUTER.

#### 1.—*PHYTOCORIS VITTIGER*, Reut., *var. β*.

Pronotum solum fasciâ lata basali nigricante; scutello toto pallido; corio vittâ apicali destituto; tibiis anticis pallidis, solum apice fuscis.

*Hab.*: Abarraçin.

#### 2.—*DEREOCORIS CORDIGER*, Hahn, *var. fallaciosa*, n. v.

Nigra, stria transversali verticis lutea; scutello, vittâ marginali corii medium corii attingente, angulo corii exteriore cuneoque rufo-testaceis. Hoc angulo interiore apiceque late nigris; tibiis fusciscenti-dav. s. basi late annuloque ante medium nigris, posticis annulo supra anulum nigrum posito albido. ♀. long. 5 mm. Statura et punctura, nec structura antennarum cum *D. cordigero*, Hahn, congruens.

*Hab.*: Bejar.

#### 3.—*DIMORPHOCORIS LIVIDIPENNIS*, n. sp.

*Mis elongatus*, parvulus, nigricans, marginibus orbitalibus colorum interioribus genisque, epimeris pronoti totis, marginibus eius lateralibus anguste maculaque magna limbi basalis obtusangulater triangulari inter callos producta serâ lividis; scutello fusciscente, linea mediana livida, vel plerumque livida, solum maculis anab. basilibus duabusque ad suturem transversalem nigricantibus. Hemelytris longissimis, abdomine duplo longioribus, colicissimis anguste nigricante, membrana equaliter nigricanti fuscata, venis obscuris nigricantibus. Pteropodibus lividis, femoribus nigro-setosis, tibiis spuriis longis scutellum fuscis. Capite basi pronoti æque lato vel hac perparum latiore, oculis breviter exsertis et levissime sursum pedunculatis, articulo primo ciliatissimo longioribus media pariet. distincte longiore. Long. ♂, 6 mm.

*Hab.*: Bejar.



*D. satyriseo*, Scott, affinis, differt fronte tota nigricante, macula basali pronoti magis extensa, scutello ad maximam partem hemielytrisque totis lividis, femoribus tibiisque punctis fuscis destitutis; a *D. Schmidtii*, Fieb., signaturis capitis et pronoti, antennis aliter constructis, oculis stylatis femoribusque pallidis, a *D. gracili*, Ramb., capite basi pronoti saltem æque lato coloreque mox di-tinguendus. Corpus nigricans, opacum, superne remote nigro-setosum, capite pronotoque squamulis subargenteis. Caput cum oculis basi pronoti saltem æque latum, vertice et fronte depressis, hujus apice declivi, margine verticis cum margine postico oculorum lineam subrectam formante. Oculi breviter stylati, angulo postico interiore ab angulo apicali pronoti distincte remoto. Rostrum coxas posticas attingens, apice nigro. Antennæ nigrae, nigro-pubescentes et nigro-pilosaе, articulo primo longius nigro-setoso, margini laterali pronoti æque longo, secundo lineari, primo paullo minus quam triplo longiore, duobus ultimis simul sumtis secundo fere æque longis, tertio secundo saltem  $\frac{1}{3}$  brevior. Pronotum basi longitudine duplo latiore, latissime leviter sinuata, disco versus apicem levissime declivi, callis bene discretis. Femora antica inferne setis longis exsertis nigris instructa.

#### 4.—SYSTELLONOTUS CHAMPIONI, n. sp.

*Mas* elongatus, superne parce brevissime fulvo-pilosulus, fuscus, capite dilutius; hemielytris longis, fusciscenti-ferrugineis, fasciis duobus niveis ornatis, opacis, basi clavi et corii, margine hujus exteriori cuncoque nitidis, obscure fuscis, fascia anteriore obscure fusco cineta, posteriore antice fascia obscurius fusca terminata; fascia anteriore nivea mox pone tertiam basalem partem et mox ante medium corii posita, per clavum fere usque ad commissuram producta, parte ejus in corio posita extus quam intus paullo et quam postice parum latiore, parte in clavo posita ad suturam parti adjacenti fasciæ corii æque lata, versus commissuram sensim angustata, transversim subtriangulari; fascia nivea corii posteriore apicali interne acuminata, suturam membranae attingente; membrana nigro-fusca; capite pone oculos in collum longius fortiter constricto; antennis pedibusque longissimis, illis articulo tertio secundo æque longo, quarta basali parte niveo; pronoto versus apicem valde angustato, basi quam apice fere triplo latiore, postice alte convexo.

Long.,  $6\frac{2}{5}$  mm.

*Femina* myrmicoidea, capite, pronoto, scutello, hemielytris, antennis pedibusque fusciscenti-ferrugineis, pronoto, strictura apicali excepta, subquadrato, basi quam apice parum latiore, lateribus subparallelis, disco sat aequaliter convexo, hemielytris scutello duplo longioribus, coriaceis, apice divaricatim rotundatis, medio fascia alba per clavum continuata commissuram tamen haud attingente, versus commissuram sensim attenuata, antice et postice anguste fusco-terminata, abdomine oblongo-globozo, basi valde constricto, margine postico segmenti primi anguste niveo; antennis articulo tertio secundo brevior, basi late niveo. Long.,  $5\frac{1}{3}$  mm.

*Hab.*: Bejar.

A *S. alpino*, Frey-Gessn., articulo antennarum tertio basi late niveo, fascia anteriore hemielytrorum maris aliter constructa, parte ejus in clavo posita externe cum tota latitudine partis in corio positæ confluentæ nec lineari, femina dilutius colorata, a *S. albofasciato*, Luc., fascia corii anteriore multo angustiore, fascia clavi tota cum illa confluentæ nec lineari articuloque tertio antennarum longiore, a *S.*

*Micelii*, Ferr. et Reut., cui structura fasciæ anterioris hemielytrorum sat similis, articulo tertio antennarum longiore hemielytrisq[ue] longioribus divergens.

*Mas*, caput basi pronoti circiter  $\frac{1}{2}$  angustius, latitudine cum oculis longius, apicem versus longe rostrato-productum, pone oculos longe et fortiter constrictum, parte postoculari a latere visa oculo aequè lata, vertice oculo vix  $\frac{1}{2}$  latiore, gula obliqua peristomio aequè longa. Oculi sat magni et exserti. Rostrum piccum, apicem coarum posticarum subattingens. Antennæ longissimæ, fuscæ, articulo primo toto secundoque basin versus dilutioribus, tertio basi late niveo; primo capite inter medium marginis interioris oculorum et apicem clypei aequè longo, secundo primo paullo minus quam triplo longiore. Scutellum parte antica declivi, postica convexa. Hemielytra membrana fusca, leviter iridescente, areolis opacis. Pedes longissimi, fusi, tibiis subtiliter et breviter pallidius spinulosi.

*Femina*, corpus dilutius, fusco-ferrugineum, abdomine nigro-fusco, superne sat longe pilosum. Caput cum oculis basi pronoti paullulum latius, versus apicem longe productum, parte infra-oculari latitudini inter apices oculorum aequè longa, parte postoculari a latere visa oculo distincte latiore, vertice oculo circiter  $2\frac{1}{3}$  latiore, gula peristomio paullo brevior. Antennæ fuscæ, basin versus pallidiores, articulo tertio basi late niveo articulo primo apicem clypei attingente, secundo primo paullo magis quam triplo longiore. Pronotum latitudine basali parum longius, margine basali latissime levissimæque sinuato, strictura apicali optime discreta. Abdomen mox pone medium basi pronoti fere duplo latius. Pedes colore corporis.

##### 5.—*DICYPTUS GENICULATUS*, Fieb., *var. disjuncta*, n. v.

A typo differt callis pronoti nigris linea media pallida disjunctis. Variat tibiis unicoloribus pallidis. Variat etiam antennæ articulo secundo ante medium annulo obsoleto pallido signato ( $\sigma$ ).

Obs.—*Mas* articulo secundo antennarum a medio sub-clavato-incrassato.

*Hab.*: Bejar.

Helsingfors: March, 1903.

#### THE FOOD OF CAPSIDS.

BY PROF. O. M. REUTER.

In this year's volume of the Entomologist's Monthly Magazine, p. 70, Mr. F. B. Jennings gives an account of a *Calocoris chenopodii*, Fall. [= *Adelphocoris lineolatus* (Göze) Reut.], which had sucked dry a *Euacanthus*, calling attention to the fact that J. W. Douglas (*op. cit.*, 1895, p. 238) had found *Capsus lanarius* [= *Deræocoris ruber* (L.), Horv.] "feeding on Aphides in his garden at Lewisham." Puton, too, says, concerning this species (Catal. d. Hém.-Hét. de l'Alsace et de la Lorraine, 1876, p. 26), "détruit les pucerons." Mr. Jennings adds:—"The members of this family had been previously supposed to feed exclusively on vegetable juices."

As this last statement is not quite accurate, I beg to refer to what I wrote, as early as 1875, on the habits of Capsids, in my work, *Revisio Critica Capsinarum*, p. 35:—"On the life and food of Capsids, close examinations are still wanting. Burmeister, Amyot and Serville, and Sahlberg, however, state that their food consists principally of small insects, and Kaltenbach notes that, concealed in the fissure of the bark, *Phytocoris tilie* will lie in wait for small larvæ and leaf-lice. I, myself, once brought home a nymph of *Leptopterna ferrugata* in a glass tube, in which, also, another little Hemipteron was enclosed; the following morning I found the latter sucked dry. Further, I once observed a *Plagiognathus* (= *Chlomydatus*) *pulicarius* on the look-out for small *Podurids*. Thus, it is settled that, at least, some kinds of Capsids live on animal juices. The relation of ant-like Capsids to ants is still unaccounted for, but their mimicry, or at least that of *Systellonotus*, seems to indicate that they live on animal food. The residence of an animal in the colonies of ants can scarcely be explained, if we suppose it to live on vegetable juices." According to Douglas (*Ent. Mo. Mag.*, ii, p. 30), *Systellonotus* probably feeds on the larvæ or pupæ of ants or on the food they bring home. E. Breddin says (in 1896) in his interesting paper, "Nachahmungsercheinungen bei Rhynchoten" (*Zeitschr. für Naturwiss.*, lxi, p. 33), concerning the myrmecoid Capsids:—"At any rate, an imitation of this kind would, however, suggest that the Hemipteron and the ant live together, and this will scarcely be comprehensible unless we assume that certain members of a pronounced phytophagous Hemipteral family have entirely altered their mode of life, so as to be able to hunt for animal food after the same manner as the ants. Indeed, the vine on which I have yearly observed *Pilophorus clavatus* is closely covered with *Coccus*, and *Pilophorus cinnamopterus*, Kbm., and *P. confusus*, Kbm., according to the observations of Puton and Reuter, which I am able to confirm, will occur particularly on such plants as are closely covered with Aphids. *Myrmecoris*, however, which has repeatedly been observed in, or near, ant colonies, may, perhaps, feed on dead ants."

Some direct observations on Capsids living on vegetable food may still be added. In my paper, *On the Study of Mimetic Hemiptera and the History of their Way of Living* (*Öfv. Finska Vet. Soc. Förh.*, xxi, 1878-79, p. 169), appears the following:—"It may be mentioned, here, that some of the Capsids known to be vegetable suckers, feed, however, on animal juices also. Thus, Professor Stål informed me that he was once stung by a *Phylus melanocephalus*, and

that the sting felt almost like that of a gnat.\* In the Zoological Gardens of Berlin I had an opportunity, in June, 1876, of seeing several nymphs of *Psallus variabilis*, *P. varians*, and *P. diminutus* sucking a butterfly larva." Concerning *Calocoris fulvomaculatus*, I have recorded, *Analecta Hemipterologica* (Berl. Ent. Zeitschr., xxv, 1881, p. 190), that I likewise once found several nymphs of this species sucking a dead larva of a butterfly.

In the same work (p. 193) there are some remarks on the habits of *Macrotylus quadrilineatus*:—"According to the observations of Prof. Mayr, this species lives on small insects, flies, and gnats, which stick to *Salvia glutinosa*, where the *Macrotylus* awaits them, sitting quite still. Probably, several Capsids, dwelling on viscid plants, live principally on animal food." These Capsids (*Macrotylus*, *Dicyphus*) are distinguished by their very short claws, which may enable them to rest on viscous plants without sticking to them.

It is possible there are still other records of Capsids living on animal food, though, for the moment, I fail to recollect any more. The facts quoted, however, will be sufficient to prove that these insects are by no means exclusively phytophagous.

Helsingfors: March 31st, 1903.

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*On the habits of Ploiaria culiciformis* (De G.).—On December 18th a specimen of this curious insect walked across my study table; it looked like a gnat, but on closer examination I saw that what looked like three pairs of legs was in reality two pairs, and a pair of slender and elbowed antennæ; there was something in front of the head that looked like a pair of spider's falces, and presently these were straightened out and revealed a short pair of legs that were held in front, between the antennæ. When the surface was somewhat difficult these were used for walking, and then the insect looked precisely as though it had four pairs of legs, it afterwards folded up the front pair "Mantis fashion" in front of the head.

From its rapacious look and gnat-like appearance I thought it would probably feed on those insects. On the 31st, having obtained a "*Culex*," I put it in the box, *Ploiaria* walked round several times, but returned to the gnat, and felt it over very carefully with its antennæ; after two or three minutes it made a sudden spring forwards and seized the gnat's abdomen between its anterior femora and tibiae, inserting its rostrum between the segments; after sucking for five minutes it shifted its hold, grasping the base of the gnat's wing with one elasper, inserting its rostrum at the base of the wing; the gnat offered no resistance, and seemed indeed not to feel the touch of those slender hair-like limbs, its own being comparatively quite clumsy. After being sucked for another five minutes the gnat collapsed, drawing its legs together and falling to the bottom of the box. Altogether *Ploiaria* sucked

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\* I was once stung, in the same way, by an *Anthocoris sylvestris*.

its victim for about forty minutes. January 5th, put another "*Culex*" in the box; *Ploiaria* attacked it like the first one, but sprang on its back, and having seized the base of each wing, inserted its rostrum in the gnat's neck, and raising itself on its legs, fairly lifted the insect off its feet. January 15th, tried *Ploiaria* with a "*Phora*," which was treated like "*Culex*." March 2nd, tried *Ploiaria* with a "*Calliphora*," first alive, and then dead, but it remained untouched. March 4th, tried to tempt *Ploiaria* with a "*Sciara*," but in vain. March 13th, tried again with a "*Sciara*;" after considerable hesitation and much feeling with its antennæ, it seized it and inserted its rostrum, but instantly withdrew it, and would not make a second trial; "*Sciara*" is evidently distasteful to it.

The front femora of *Ploiaria caliciformis* have at the back a double row of sharp spines, the anterior tibiæ shut down tightly between these. The legs and antennæ bear short adpressed hairs.—H. J. CHARBONNIER, Redland, Bristol: April, 1903.

*A sugar trap for Lepidoptera*.—One autumn in the early sixties, when a boy at school, the idea occurred to me to try and devise a sugar trap. An earthenware bread pan was covered with green lino, in the centre of which was a funnel of the same material. The saccharine preparation was contained in a soup plate. The whole was placed in a likely looking corner in my father's garden at Wandsworth. Great hopes were aroused, and the trap was for some days eagerly examined every morning, but, alas! without result. The trap fell out of favour and was neglected. Wet weather set in, and some time afterwards the trap was again visited; the whole of the bottom of the pan was covered for at least an inch with a watery mixture, in which were the sodden remains of countless moths! So far as I can remember these were chiefly *O. pistacina*, with a few *A. lunosa* and one *P. aprilina*, all much the worse for their ducking.

In the autumn of 1898, after the lapse of something like 35 years, I determined to experiment again at Morteheo, North Devon. A box some 15 inches square by 12 inches deep was fitted with a lino lid in a wooden frame, a lino funnel being provided as before. Believing very liquid sugar to be more attractive than a stiffer preparation, a mixture of sugar and cider was placed in a jam pot covered with lino; subsequently, in addition to this, the inside of the box was nightly smeared with "sugar" to increase the odour-producing surface. To keep the moths quiet ledges were provided round the top for them to get under, and pieces of rough cork standing on nails for legs afforded further means for the insects to secrete themselves from the light of dawning day.

This apparatus was tried in various places near the house in August and September, 1898-1900. The results were disappointing; some moths were taken nearly every night, but seldom many. By far the commonest were *H. polyodon*, *A. xanthographa* and *pronuba*. In much smaller numbers came *H. didyma (oculea)*, *litesa* and *meticulosa* (this was swarming at sugar close by), *A. saucia* and *plecta*, *A. lunosa*, *P. gamma* (flying in countless numbers a few yards off), *E. bisetata* and *X. spadicaria (ferrugaria)*. Besides the above were single specimens of *P. socia (petrificata)*, *A. puta* and *c-nigrum*, *A. pyramidea*, *C. micacea* and *matura (Cytherea)*, and *T. batis*. A few *Micros* turned up from time to time, such as *Depressaria costosa*, *arenella*, *subpropinquella*, *ocellana* and *applanata*, and an unnamed *Tortrix*.



I have so far omitted to mention butterflies. The part in my garden in which the traps was most often set—an open grassy place adjoining a small coppice—is a favourite resort of many species (certainly twenty), several of which are quite plentiful there, yet of all these, two species and two only, were ever found in, on, or flying around the trap. First comes *L. Egeria*, of which eight specimens in all were captured, although it is by no means abundant in or near the garden. Secondly, that essentially garden species, *V. Atalanta*; of this two entered the trap in 1899, and many in 1890. Indeed, on one afternoon in the latter year there were at one time in, on, or about the trap no fewer than twenty-five of these beautiful creatures. But no “white,” no “blue,” no “meadow-brown,” no “tortoiseshell,” no “peacock” ever came. But why not? Why at sugar *Egeria* and *Atalanta* only? Why inside the house *urticæ* only? What creatures more alike (save for the pattern on their wings) than these two common *Vanessas*, and yet what a striking difference of habit? Shall we call it a moral or an intellectual difference?

Another form of sugar trap, but a less promising one, is the soda water bottle half filled with saccharine solution hung up in a tree to catch wasps. The attractiveness of this form of trap seems to be greatly increased by time; the decomposing mass of wasps and blue bottles becoming irresistible. *Lepidoptera* are always captured in considerable numbers, but “evil communications corrupt good specimens,” and identification is not always easy; but I have noted besides some of the commoner autumnal sugar-frequenting *Noctuæ* our friends *L. Egeria* and *V. Atalanta*. One such bottle captured unfortunately a number of my own bees, so I turned out the greedy creatures on to the lawn, in the hope that some might recover. While ministering to their wants a red admiral flew round me for some minutes, and finally settled on a heap of the half-drowned *Aculeates*! *Apropos* of this, the Rev. T. M. Cardus told me that some years ago at Chittlehampton, North Devon, he found a very fair specimen of *V. Antiopa* in such a wasp bottle. The subject clearly deserves more attention. — G. B. LONGSTAFF, Highlands, Putney Heath, S.W.: 19th February, 1903.

*On the habits of the larvæ of Hadena protea.*—From a female of this species taken at sugar on September 27th, 1901, I obtained a small batch of eggs. These hatched on April 22nd following, and the young larvæ were placed on swelling oak buds, the leaves at that date not being open. They immediately began to eat their way into the buds, and I saw nothing more of them for a fortnight, when I placed some fresh oak twigs into the bottle by the old ones, so that the larvæ could crawl from one to the other. That the larvæ were busy at work I could easily see, for little piles of frass were adhering to the sides of the holes made by them when they entered. I opened one of the buds to examine the young larva, and found a plump whitish-looking little grub with a shining black head, more like a *Tortrix* larva than that of a *Hadena*. As soon as it was placed on one of the fresh buds, which by this time were bursting into leaf, it immediately set to work and buried itself as quickly as possible. When they became larger, and the leaves were more fully expanded, they spun the tips of them together, and lived in the tents thus formed, and sometimes I noticed two or three larvæ in the same tent, although, in a state of nature, I do not suppose this would happen. They concealed themselves in this fashion until they were nearly full grown, and even then they appeared to be both

to expose themselves, but kept to the under-sides of the leaves as much as possible. The full grown larva is not at all unlike that of *Taniocampa stabilis*, and might be easily overlooked if one was not specially thinking of it. It is, however, of a much brighter green, and is not freckled with whitish-yellow raised dots, like that common species, and, moreover, the anterior segments are more thickened. It is a pity Buckler did not give some sort of account of the habits of the great number of larvæ he reared from the egg.—GERVASE F. MATHEW, Dovereourt, Essex: *March 16th*, 1903.

*Notes on the season and some captures of Diptera at Lyndhurst in 1902.*—Several correspondents have informed me that the past year was a bad one in their districts for *Diptera*, and from my own experience Lyndhurst was no exception in this respect. But two severe frosts in the spring, the second being quite at the end of May, followed by a cold wet summer and autumn were sufficient to account for this. The season was also late and irregular, many species being from a fortnight to a month later than usual, whilst occasionally solitary specimens put in an early appearance and then disappeared again until after their normal time. A few species also made a welcome re-appearance after an absence of several years. It will, however, be marked in my memory as the year when I at last succeeded in taking *Microdon mutabilis*, L., for which I had been on the look out since 1897, when Col. Yerbury took several at Matley Bog. I constantly worked over the same ground, so far as I could locate it from the directions he kindly gave me, but it was not until Dr. Sharp showed me the exact spot (some distance from the other) where he took the fly in 1901, that my efforts met with any success. Under his guidance a party of four visited this on June 11th, but the day was too dull, and the result nil. Wretched weather then followed, and it was not until the 25th when some really fine hot weather set in that I went there again with the pleasing result of three netted out of five seen, and on the following day I secured one more, all apparently just out. I then left Lyndhurst, but having informed Dr. Sharp he went there on the 30th with his daughter, who captured four, and knocked down another which was lost. My specimens were taken within a small space outside of which it did not seem to exist, and from this experience and what I have been told, the fly evidently congregates in small colonies where the ground is suitable, and unless the collector comes across one of these isolated patches, a blank day will probably be the result.

Amongst my captures for the year were 1 *Platyura marginata*, Mg., 1 *P. fasciata*, Ltr., 2 *Ceroplatus tipuloides*, F., 4 *Chrysomotus bipunctatus*, Scop., ♀, 1 *Pachygaster orbitalis*, Whlbg. (bred from holly bark), 4 *Asilus crabroniformis*, L., *Xanthandrus comtus*, Harr., *Catabomba selenitica*, Mg., 1, *Syrphus torvus*, O. S., 3 *Tolucella inanis*, L., 1 *Mallota cimbiciformis*, Fln., *Criorrhina ranunculi*, Pz., 1 *Callicera aenea*, F., 4 *Microdon mutabilis*, L., 5 *Myopa fasciata*, Mg., 2 *Echinomyia grossa*, L., *Servillia ursina*, Mg., 1 *Trixa grisea*, Mg., *Spilogaster uliginosa*, Fln., *S. fuscata*, Fln., 2 *Neottiophilum præustum*, Mg., 1, *Phaomyia fuscipennis*, Mg., 1 *Anomæa antica*, W., 1 *Palloptera saltuum*, L., and I also obtained from Mr. Piffard 2 *Hypoderma lineatum* taken at Lymington.

.1 *Correction.*—Amongst my captures of *Diptera* in 1898 (see Ent. Mo. Mag.,

vol. xxxiv, p. 95), I recorded a new *Sciomys* which had been named for me *S. lata*, Schnr. This, however, has recently been identified by Mr. J. E. Collin as *S. dorsata*, Ztt., but I have not heard from him whether "*lata*" has now to be struck out of the British List, 2nd edition.—FREDK. C. ADAMS, 50, Ashley Gardens, S.W.: April, 1903.

*Trichoptera, Neuroptera-Planipennia, and Pseudo-Neuroptera collected in Herefordshire by Col. Yerbury in 1902.*—During his long sojourn in Herefordshire last year, Col. Yerbury collected such "*Neuroptera*" as came to hand, and presented the results to me. The list is a short one, and contains less than 50 species, but, nevertheless, it is probably the first attempt to catalogue and localize so many species from this county, and will serve as a nucleus. A county the surface of which is so varied, and possessing such an abundant water supply, must of necessity be rich in these insects. The only species that appear to call for special mention are *Limnophilus ignavus* and *Tinodes dives* amongst the *Trichoptera*, and *Hemerobius atrifrons* amongst the *Planipennia*; this last is wide-spread, but during many years I never captured in Britain so many examples as are present in this collection from one county only.

TRICHOPTERA.—*Limnophilus flavicornis*, F., Tarrington, September 20th; *L. marmoratus*, Curt., Tarrington, September 20th; *L. stigma*, Curt., Clifford's Castle, August 27th; *L. lunatus*, Curt., Tarrington, August 5th; *L. ignavus*, McLach., Woolhope, September 15th; *L. centralis*, Curt., Malvern Hills, June 8th; *L. vittatus*, F., Tran Inn, June 29th; *L. auricula*, Curt., Tarrington, May 29th, Woolhope, June 10th; *L. sparsus*, Curt., Clifford's Castle, July 28th. *Bereä maurus*, Curt., Ledbury, June 4th, Cusop, July 20th. *Odontocerus albicorne*, Scop., Cusop, July 20th, 26th, and 27th. *Leptocerus aterrimus*, Steph., Tarrington, June 3rd; *L. bifasciatus*, L., Tarrington, August 6th. *Mylacides azurea*, L., Clifford's Castle, July 28th (a var. in which the antennæ are wholly white). *Hydropsyche angustipennis*, Curt., Cusop, July 27th. *Philopotamus montanus*, Donov., Cusop, June 11th. *Wormaldia occipitalis*, Pict., Cusop, July 27th. *Holocentropus picicornis*, Steph., Tarrington, June 3rd and 9th. *Cyrrus trimaculatus*, Curt., Tarrington, June 26th. *Tinodes wæneri*, L., Cusop, July 26th, Clifford's Castle, July 28th; *T. dives*, Pict., Tarrington, May 31st. *Lype phæopa*, Steph., Tarrington, May 31st. *Chimarra marginata*, L., Clifford's Castle, July 28th. *Agapetus fuscipes*, Curt., Cusop, June 11th, July 27th. *Rhyacophila dorsalis*, Curt., Cusop, September 20th.

PLANIPENNIA.—*Panorpa germanica*, L., Much Marele, May 27th; *P. communis*, L., Malvern Hills, June 8th. *Sialis fuliginosa*, Pict., Tarrington, May 31st, Cusop, June 11th. *Rhaphidia notata*, F., Tarrington, May 31st. *Micromus variegatus*, F., Tarrington, July 25th, Clifford's Castle, July 28th and August 27th. *Hemerobius humuli*, L., Tarrington, May 8th and 18th, July 4th and 12th; *H. atrifrons*, McLach., Tarrington, August 18th; *H. subnebulosus*, Steph., Much Marele, May 27th, Tarrington, July 30th, Clifford's Castle, August 13th. *Chrysopa perla*, L., Tarrington, June 15th and July 20th; *Ch. tenella*, Schnd., Tarrington, July 12th; *Ch. alba*, L., Tarrington, June 17th.

PSEUDO-NEUROPTERA.—*Psocus fasciatus*, F., Woolhope, July 21st. *Elipsocus Westwoodii*, McLach., Tarrington, June 3rd. *Dictyopteryx microcephala*, Pict.,

Cusop. June 11th. *Perla cephalotes*, Curt., Cusop, June 11th. *Chloroperla grammica*, Poda, Tarrington, May 31st. *Nemoura variegata*, Oliv., Much Marele, May 21st, Tarrington, June 22nd. *Sympetrum striolatum*, Chp., Tarrington, September 15th and 20th. *Aeschna cyanea*, Müll., Tarrington, July 14th. *Pyrrhosoma nymphula*, Sulz., Tarrington, June 2nd and 21st. *Ischnura elegans*, V. d. L., Tarrington, June 3rd. *Agrion puella*, L., Tarrington, May 29th, June 3rd and 9th. [A few species of *Odonata* from the county, mostly determined by me for Dr. Wood, are as follows:—*Libellula depressa* L., common and generally distributed; *L. quadrimaculata* L., Devereux Pool, Woolhope. *Sympetrum sanguineum*, Müll., and *S. striolatum*, Chp., Devereux Pool, Woolhope. *Cordulegaster annulatus*, Latr., Queen's Wood, Much Marele. *Calopteryx splendens*, Harris, Leech Pool, and banks of Wye, common; *C. Virgo*, L., common and generally distributed. *Platycnemis pennipes*, Pall., banks of Wye, very common. *Ephallagma eunthigerum*, Chp., Devereux Pool, Woolhope. *Lestes sponsa*, Hans., Devereux Pool, Woolhope.] —R. McLACHLAN, Lewisham, London: *March*, 1903.

*Cæcilius (Pterodela) pedicularius*, L., in *April*.—To-day, when reading a newspaper in the City I observed a minute insect on the page, which, from its movements, could hardly have been other than the above-named species. After the difficulty familiar to all who have made the attempt, it was induced to enter a tube, and its specific identity was confirmed. The only point of interest regarding this occurrence is *the date*. We are accustomed to associate this abundant species with harvest-time and autumn (and even, in mild seasons, winter). Presuming the species to be of palaearctic origin, it is now spread (probably by commerce) nearly all over the world, and examples taken in Britain in spring and early summer are likely to have been imported in the egg or nymph stage (or even as perfect insects) with the abundant supplies of fruit from South Africa or Australia. —ID.: *April 7th*, 1903.

*Edipoda tartarica* at *Huddersfield*.—On February 5th last I had brought to me a very lively specimen of *Edipoda tartarica*, which had been found among bananas purchased in the town. The only other locally caught specimen I know is the one recorded in this journal (*Ent. Mo. Mag.*, October, 1896, p. 231) by Mr. C. A. Briggs, and which was also from Huddersfield.—GEO. T. PORRITT, Edgerton, Huddersfield: *April 6th*, 1903.

## Obituary.

*The Rev. Thomas Ansell Marshall, M.A., F.E.S.*—We deeply regret to have to announce the death of Mr. Marshall, which occurred at Ajaccio, Corsica, on April 11th. An extended notice will follow.

## Review.

A LIST OF NORTH AMERICAN LEPIDOPTERA; by HARRISON G. DYAR, Ph.D.



(assisted by C. H. FERNALD, Ph.D., the late Rev. GEORGE D. HULST, and AUGUST BUSCK). Forming Bulletin No. 52 of the United States National Museum. Pp. 723, 8vo. Washington, 1902.

"This work is intended to take the place of Smith's List of the *Lepidoptera* of Boreal America (1891)"; so says the preface. By "North America," America north of Mexico is understood. The arrangement is practically that of Meyrick's Handbook, save that the Butterflies head the List. 6622 species (exclusive of named varieties) are enumerated. A very small number of species are diagnosed as new. The richness of the National Museum is evident by the small number of species indicated as not represented therein. The amount of labour involved in the preparation of a List such as this is colossal; the bibliographical references are full. It is very probable that an attempt to analyse the List as a whole, or in part may be made in a future No. of this Magazine. Meanwhile we congratulate Dr. Dyar and his assistants on the completion of the List, and N. American Lepidopterists generally on having such a guide at hand.

## Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY:—The Second Ordinary Meeting was held in the Royal Institution, Liverpool, the President, Mr. S. J. Capper, presiding over a large attendance of Members.

The Minutes having been confirmed, the Secretary announced donations to the Library from Dr. J. Harold Bailey (Port Erin) and Mr. H. St. John K. Donisthorpe, F.Z.S. (London). Mr. A. H. Lister, of Bootle, was unanimously elected a Member of the Society; after which, on the motion of Dr. Cotton (St. Helens), seconded by Mr. J. R. le B. Tomlin (Chester), it was decided to hold a summer gathering in Delamere Forest on June 13th.

The paper of the evening was contributed by Dr. Edmund Capper of Leicester, son of the veteran President, who dealt in a most interesting manner with "The story of *Acidalia contiguaria*," of which desirable Lepidopteron he has probably captured more specimens in its natural habitat on and in the neighbourhood of Moel Llys than any other entomologist. Dr. Capper's paper, which traced the first occurrence of *A. contiguaria* to the late Mr. Richard Weaver in 1855 to its distribution at the present day, also dealt with many important facts in the life-history of the species. The paper was discussed by Mr. S. J. Capper, Dr. J. Ellis, and Messrs. Pierce and Tait, the latter of whom confirmed the lecturer's premise that only one brood was produced during the year. A hearty vote of thanks having been accorded Dr. Capper, the following exhibits were made:—*Noctua flammatrix*, *Xylina conformis*, *Leucania extranea*, and other rare British *Noctuidæ*, by Mr. F. N. Pierce (Liverpool); long series of the light and dark forms of *A. contiguaria* from Penmaenmawr, by Mr. R. Tait, jun. (Manchester); *Thanasimus formicarius*, new to the local list, by Mr. Guy Dunlop (Mossley Hill); embryo nest of *Ipsa germanica* from bee-hive, by Mr. F. Birch (Liverpool); a fine series of *Odontopera bidentata*, varying from black to very pale brown, and including one semi-diaphanous specimen, by Mr. B. H. Crabtree (Manchester), and a fine example of *Ædipoda cærulescens*, of which two specimens have been taken at Southampton, by Mr. E. J. B. Sopp (Birkdale), *Hon. Secretary*.



THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY,  
February 12th, 1903.—Mr. E. STEP, F.L.S., President, in the Chair.

Mr. Barnett exhibited a very lightly marked specimen of *Ematurga atomaria*, and a very pale example of *Tephrosia luridata (extersaria)*, both from West Wickham Woods. Mr. Hy. J. Turner, (1) *Erasmia pulchella*, a Chalcosid moth and one of the most brilliantly coloured of the *Lepidoptera*; *Campylotes histrionicus*, another species of the same family, and *Areas galactina*, an *Arctiid*, all from Darjeeling; (2) specimens of *Abraxas sylvata (ulmata)* from Amersham, Bucks, and from Assam, almost identical in tint and markings; (3) On behalf of Mr. Day, of Carlisle, a box of local *Coleoptera*, consisting of some three dozen species, including *Hydrothassa hannoverana*, *Onalium septentrionis*, *Agabus congener*, *Stenus Guignemeri*, *Hydroporus picicrus*, *H. incognitus*, &c., and (4) a box, chiefly of *Pyralidæ* from Assam, including representatives of some twenty-five genera. Mr. Enock gave a lantern demonstration, dealing chiefly with details of the transformations of *Brachytron pratense* and *Gonepteryx rhamni*:

February 26th, 1903.—The President in the Chair.

Mr. F. G. Cannon, of Hampstead, was elected a Member.

A special donation to the Library was announced, consisting of a complete set of the papers and articles written by Professor E. B. Poulton, F.R.S. on Protective Resemblance in Insects, from the Author.

Mr. Turner exhibited a number of species of *Lepidoptera*, *Coleoptera*, *Hemiptera*, and *Diptera*, taken during a week spent at Inistroe, Co. Kilkenny, Ireland, in company with Mr. Step. Most of the species were common but interesting, as being records from a hitherto unworked district. *Soronia punctatissima*, a *Coleopteron* found in some numbers in a *Cossus*-infected Poplar tree, was worth noting as a new record for Ireland. Mr. G. W. Browne, a number of *Lepidoptera* from Deal, taken in August, 1902, and including long and varied series of *Agrotis tritici* and *A. valligera*, together with *Syrichthus malvæ*, v. *Taras*, from Hailsham, *Apamea ophiogramma*, *Dicycla oo* and *Iodis vernaria*, from Lee. Mr. Step gave a full account of his visit to Ireland in August, 1902, and illustrated his remarks with lantern slides of the scenery and studies of the vegetation. Mr. Goulton, some very fine photographic slides of the ova and larvæ of several species of *Lepidoptera*.

March 12th, 1903.—The President in the Chair.

Mr. Hickman, of Kennington Road, and Mr. Furnival, of Harlesden, were elected Members.

Dr. Chapman exhibited living examples of the three European species of the genus *Thais*, viz., *T. rumina*, *T. polyxena*, and *T. Cerisyi*. He also showed a bird parasite, *Docophorus communis*?, taken from a blackbird, and called attention to the curious jointed appendage in front of the antenna, which forms a guard to the latter organ, and is said to occur in no other group of insects. Mr. R. Adkin, series of *Acidalia aversata*, consisting of broods from a non-banded female and from a banded female. In both cases banded and non-banded offspring were produced. He also read notes as to the colour and variation of the two series. Mr.

W. J. Kaye, specimens of *Larentia didymata*, bred off broom from Co. Kerry. They had a very reduced central black band and all the markings were clearly contrasted with the pale ground colour. Professor E. B. Poulton, F.R.S., gave a long address on "Recent Researches in Protective Resemblance, Warning Colours, and Mimicry in Insects," and illustrated his remarks with a large number of lantern slides.

March 26th, 1903.—The President in the Chair.

Mr. E. Warne, St. John's Hill, Clapham, was elected a Member.

Mr. Jennings exhibited a series of the local *Cryptocephalus bipunctatus* (v. *lineola*, F.) taken at Charing, Kent, on hazel bushes. Mr. Colthrup, hibernating larval nests of *Porthesia chrysorrhoea* from Newhaven, where they could be found abundantly. Mr. W. J. Kaye, the two *Ithomiines*, *Methona confusa* and *Thyridia psidii* from British Guiana, and remarked on the wonderful agreement in colour between these two distinct species, both there and in Paraguay. Mr. Adkin, a very dark example of *Amorpha* (*Smerinthus*) *populi*, bred from a larva taken at Bexley. It was considerably darker than a Sutherland example in both the olive-grey of the fore-wings and the red patch of the hind-wings. Dr. Chapman, specimens of *Lasioptera rubi*, a *Cecidomyid* that makes swellings in the stems of bramble. Mr. Hy. J. Turner, a large number of species of various Orders of Insects, collected at Amersham, Bucks, during a week's holiday spent there at the end of June, 1902, and gave Notes on the Fauna and Flora of the district.—HY. J. TURNER, *Hon. Secretary*.

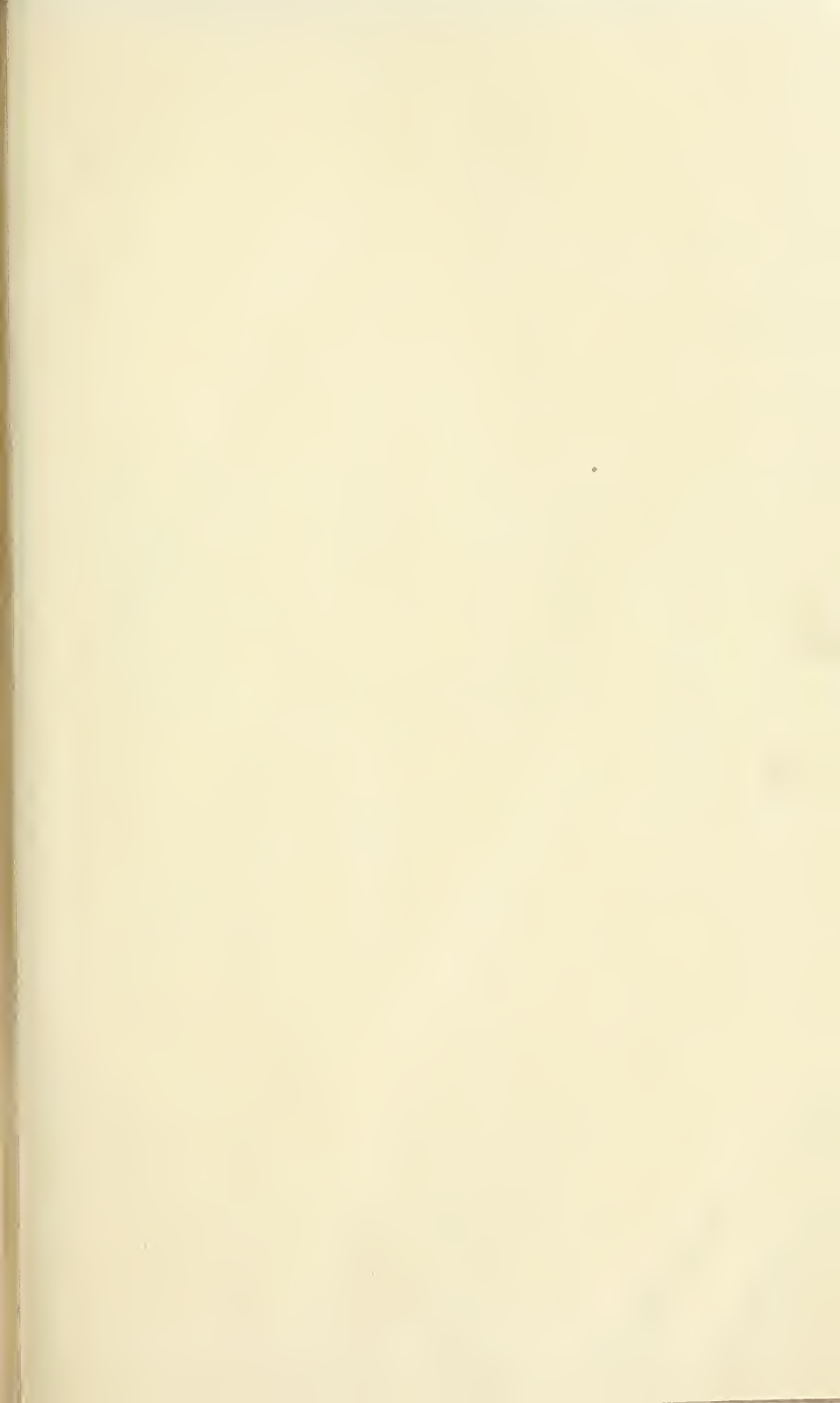
ENTOMOLOGICAL SOCIETY OF LONDON: March 18th, 1903.—Professor E. B. POULTON, M.A., D.Sc., F.R.S., President, in the Chair.

Mr. H. W. Bell-Marley, Durban, Natal; Mr. J. C. Dollman, Newton Grove, Bedford Park, W.; Mr. W. W. Rowlands, Lickey Grange, near Bromsgrove; and Prof. J. H. Taylor, M.A., The Yorkshire College, Leeds; were elected Fellows of the Society.

The Rev. F. D. Morice exhibited, with drawings, a dissected gynandromorphous specimen of a bee (*Osmia fulviventris*, Panz.), sent him (with the gynandromorphous *Eucera* exhibited at the last meeting, and several other similar monstrosities) by M. Jean Vachal of Argentat, France. The species is a common one; whether that called *fulviventris* in the British List is a variety of it, or a distinct species, is not yet finally decided. Mr. A. Lacot, a number of specimens of *Malacosoma neustria* × *castrensis* in various stages, including a series of six ♂♂ and sixteen ♀♀ imagines reared during 1902 from one batch of ova laid by a ♀ *castrensis*, which had been mated with a ♂ *neustria*, and two ♀♀ reared from another batch of ova the result of a similar cross; also blown larvæ of hybrid parentage, and twigs showing attempts at ovipositing on the part of ♀♀ hybrids that had paired with hybrid ♂♂ of the same brood; also a series of *M. neustria*, *M. castrensis* and the hybrid moths reared during 1901 for comparison. The females attempted egg-laying, adopting the position and motions of normal females

of *castrensis*, but at each opening of the ovipositor they produced only the small drop of cement which accompanies the egg in the normal oviposition of the parent species, resulting in a more or less perfect spiral band of cement upon the twigs. Perhaps the most interesting feature of the exhibit is the great variability shown by the specimens comprising the larger of the 1902 compared with the remarkable uniformity of the hybrid moths reared during the previous year. Mr. H. St. J. Donisthorpe, specimens of *Trimium brevicorne*, Reichl., from Chiddingfold, Surrey, an unusually southern locality for this species. Mr. C. P. Pickett, specimens of *Hybernia leucophaearia* and *Phigalia pedaria* taken at Chingford on February 14th, and remarked upon the curious resting habit of the former species. He also exhibited ova of *Eudromis versicolor* on birch twigs, laid March 16th. The parent moths remained *in cop.* thirty-three and a half hours. Mr. G. C. Champion, a long series of specimens of a species of *Cueorchinus* (! *pygiformis*) from Piedrahita and Bejar, Spain, and called attention to the great dissimilarity between the sexes, and also to the possibility of the females being dimorphic, one form clothed with green scales, and the other with grey scales like the male. He also exhibited *Dorcadion Dejeani*, Chev., from the Sierra de Bejar, a species peculiar to that district. Mr. R. McLachlan, F.R.S., a dragon-fly belonging to a small species of the genus *Orthetrum* (?), attacked by a fly almost as large as itself of the family *Asilidae*, taken in Persia in June, 1902, by Mr. H. F. Witherby, F.Z.S., the well-known ornithologist. The fly had inserted its proboscis at the junction of the head and prothorax, a vulnerable point. He also exhibited a female specimen of a large *Æschnid* dragon-fly, *Hemianax ephippiger*, Burm., captured in a street at Devonport on February 24th, 1903 [*cf. ante*, p. 96.—EDS.]. Professor E. B. Poulton, F.R.S., exhibited seasonal forms of *Precis antilope*, parent and offspring, bred in 1902 by Mr. G. A. K. Marshall in South Africa, showing the remarkable dimorphism of the species, which was especially noticeable in the protective colouring of the under-side of the dry-season form as compared with the startling conspicuousness of the under-side of the wet. He also exhibited *Precis caelestina*, captured by Dr. C. A. Wigg in the Victoria Nyanza region, with the dry-season form of that species, now taken probably for the first time. Mr. W. J. Lucas exhibited with the lantern a slide showing the larva of *Cossus ligniperda* in its gallery. Dr. T. A. Chapman exhibited with the lantern a series of slides illustrating the life history of *Liphyra brassolis*.

Mr. G. C. Champion, F.Z.S., read a paper on "An Entomological Excursion to Bejar, Central Spain." Mr. Edward Saunders, F.R.S., F.L.S., communicated a paper on "*Hymenoptera Aculeata* collected by the Rev. A. E. Eaton, M.A., in Madeira and Teneriffe, in the spring of 1902." Dr. F. A. Dixey, M.A., M.D., read a paper, illustrated by lantern slides, "On *Lepidoptera* from the White Nile, collected by Mr. W. L. S. Loat, F.Z.S.; with further Notes on Seasonal Dimorphism in Butterflies." He said that Mr. Loat's series did not seem to favour the opinion that had been held that *Teracolus evagore*, as described and figured by Klug, was the dry-season form of *T. yerburii*, Swinh. It appeared from this and other evidence that Mr. G. A. K. Marshall was right in dissociating the two forms. The weakness of the reasons given for the contrary view had lately been pointed out by Col. Yerbury.—H. ROWLAND BROWN, *Hon. Sec.*





DRAGON-FLY ATTACKED BY AN ASILID-FLY.

(see page 132).



DESCRIPTIONS OF THE LARVA AND PUPA OF *MOMPHA*  
*CONTURBATELLA*, IIb.

BY EUSTACE R. BANKES, M.A., F.E.S.

The following description of the larva of *Mompha* (*Laverna*) *conturbatella* was made on June 18th, 1901, from specimens, about full-fed, received on that day from my kind friend Mr. W. R. Jeffrey, who had collected them in the neighbourhood of Ashford, Kent.

LARVA.

*Length*, when fairly extended, 9 mm. *Greatest breadth*, 1·8 mm.

*Head* brownish-black, of decidedly greater breadth than height, but conspicuously narrower than, and partially retractile into, the prothoracic segment; lobes not prominently rounded; antennæ very short, watery-whitish, ringed with black; ocelli black. *Prothoracic segment* rather narrower than those immediately succeeding it, and bearing a blackish-brown dorsal plate, of medium size, bisected by a narrow pale central line. The *thoracic* and *abdominal* segments together form a mass that is broad in the middle, and tapers gradually towards both extremities: in colour it is crimsonish coral-red, shading into dirty pale ochreous on the thorax, and with the well-defined intersegmental divisions showing, when visible, as pale ochreous bars: skin hardly shining, smooth dorsally, wrinkled and pitted laterally. There are no defined dorsal or subdorsal lines, but in the subdorsal and spiracular regions there are irregular depressions, enclosing pale whitish-ochreous marks and spots, which tend to form irregular, indefinite, much interrupted lines. In the male larva the embryo *testes* show through the skin of the fifth abdominal segment as a conspicuous dark dorsal blotch. The *spiracles* and *tubercles* only appear as very minute and inconspicuous raised blackish dots, emitting pale bristles and hairs of moderate length. *Anal plate* of medium size, blackish-brown. *Ventral surface* dirty pale ochreous, tinged with reddish below the thorax. *Legs* highly polished, externally blackish with pale bars, internally paler. *Prolegs* semitransparent, watery-whitish.

Many larvæ in their last skins were compared together in 1901, and numbers more in 1902, when further bountiful supplies were received, through the kindness of Mr. Jeffrey, on May 13th and 27th, but none showed any noteworthy variation. Owing to their habits, it is impossible to watch the larvæ continuously through their changes, but individuals in various earlier skins—the smallest, when moderately extended, being barely 3 mm. in length, by 66 mm. in greatest breadth—have been carefully examined, and all agree with those described above, except in the colour of the thorax and abdomen. This, which, in the smallest ones observed, is ochreous rufous-cinnamon, appears to change, with the growth of the larva, first to rufous-cinnamon, and then to dirty raw-umber in the penultimate skin. In the young larva the alimentary canal shows through the semitransparent skin, in places, as a dark greenish dorsal line.

The larva lives in a shoot of *Epilobium angustifolium*, spinning the young leaves tightly together with white silk, and feeding on the heart of the shoot. It gradually works its way downwards, sometimes at last boring for a short distance into the stem itself, and leaves its frass, which is brown when quite fresh, but

blackish when dry, behind it in its burrow, which is rather sparingly lined with white silk. When moving, or when being moved, about, the larva always emits a silken thread: unless seeking for fresh food, it lives quietly in concealment in the shoot until full-fed, when it wanders about in search of a suitable place for pupation, but if extracted from its burrow, it becomes very restless, roaming about ceaselessly at a moderate pace. The power of contracting its segments, and thus reducing its length to a minimum, is developed to a most remarkable degree. Some of the larvæ made their cocoons among the leaves of the spun-up shoots,\* lying prone, whilst the rest constructed them between the leaves and either the glass sides of the jar or the piece of blotting-paper at the bottom of the jar, or else between the blotting-paper and the glass sides, or bottom, of the jar. All, however, showed a most marked partiality for a very "tight place," invariably spinning their cocoons between two surfaces that were pressing against one another.

Nearly all the cocoons spun in 1901 (when the larvæ were collected so late that the bulk of the healthy ones had probably fed up and already left the shoots) produced ichneumon-flies, not yet identified, but those of last year yielded a long and beautiful series of moths.

Strange though it may seem, the only English descriptions that I can find of this larva, which has been known in Britain for the last 46 years, and frequently reared, are totally incorrect. Our earliest notices of it occur in Ent. Wk. Int., 1856, pp. 133, 142, where the late Messrs. W. Machin and F. O. Standish, respectively, state that they have just bred a few imagines "from black larvæ" found in spun tops of *Epilobium angustifolium* on Box Hill. Stainton, following their lead, says in Ent. Ann., 1857, p. 108, "The larva is black," and in Manual, ii, 398 (1859), "Larva blackish;" while, lastly, Meyrick in HB. Brit. Lep., 680 (1895), copies this latter remark *verbatim*. I can only suppose that Messrs. Machin and Standish noticed, among the shoots, the "black" larvæ of some interloper—probably of *Sericoris lacunana*,† whose blackish larvæ were actually present in the shoots of *Epilobium angustifolium* that Mr. Jeffrey sent me—and mistook them for the "Simon Pure." However this may be, I have, in the course of the last nineteen months, had some 150 larvæ of *M. conturbatella*, Hb., under close and constant observation, but not one has, in any skin, been darker in colour than dirty raw-umber, whilst all have been crimsonish coral-red after their final moult.

\* The choice of such a site was, I am inclined to think, due to abnormal conditions, and would rarely be made in nature. Treitschke, in Schin. Eur., ix (2), 87 (1833), says that pupation takes place "between the leaves," but does not state whether his observations were made on the larvæ in nature, or in confinement.

† Since the above was written, Mr. J. H. Durrant, to whom I am also indebted for extracts from the notices by Treitschke and Frey, has kindly sent me copies of some unpublished MS. notes by Stainton, which purport to refer to the larva of *M. conturbatella*. These relate to one batch from Box Hill, and two from the continent, and in each case give the larva as being of some shade of brown (which is true of *M. conturbatella* before its final moult, as well as of *S. lacunana* in some of its forms), but his entries about one of the continental consignments conclude with the noteworthy remark, "Two species were reared, *Lacerna conturbatella* and *Sericoris lacunana*."

Of Continental authors, Treitschke, in Schmet. Eur., ix (2), 86-7 (1833), asserts that the larva is "flesh-brown" dorsally, while Frey, after giving in Tin. u. Pter., 278 (1856), a description of it, apparently borrowed from those of Treitschke and Fischer von Röslerstamm, says in Linn. Ent., xiv, 186 (1860), that he has found the diagnosis of it by the latter to be unreliable, and adds an original description in which the upper-side is stated to be "leather-brown." I am doubtful how to interpret Treitschke's term "flesh-brown," but conclude that both it and Frey's "leather-brown" refer to larvæ of *M. conturbatella* which had not yet undergone their final moult.

The discrepancies between the most reliable of the published descriptions and my own observations naturally suggested the thought that possibly two closely allied species, with almost identical imagines but distinct larvæ, might be confused together under the name *conturbatella*, but the whole weight of evidence seems entirely opposed to such an idea.

#### PUPA.

On June 24th, 1901, I drew up, from two pupæ that had been in this state about three or four days, a detailed description, to which one or two slight additions were made in 1902, when other pupæ were critically examined.

*Length*, 6-6.5 mm. *Greatest breadth*, 1.8 mm.

Fairly cylindrical, broadest across the meso- and meta-thorax, and gradually tapering thence towards the anal extremity. Rufous-orange dorsally; orange ventrally, with the wing- and appendage-cases rather paler. As the pupa matures, the colour gradually deepens, becoming more rufous. Segmental divisions very clearly defined. Skin smooth, highly polished, with a few short and inconspicuous scattered orange hairs. *Head* broad, flattened above; a slightly raised keel, which is continued as a central line on the pro- and meso-thorax, alone marks the division between the two lobes. *Eyes* visible as conspicuous blackish spots or dots. *Antennal*, *wing*, and *posterior tarsal-cases* reaching to the end of the fourth abdominal segment. *Anal extremity* sharply pointed, armed with a conspicuous, strong, reddish-brown, projecting spike, about 5 mm. long, bearing several orange bristles near, and at right angles to, its apex. In the pupæ tested (doubtless males), the free abdominal segments were the 5th and 6th. The pupa seems particularly fond of holding out its posterior segments at a strong angle of about 45° to the rest of its length.

The cocoon, which is about 12 mm. in length, by 5 or 5.5 mm. in breadth, is fusiform, being very broad across the middle, and tapering off to a point at each end: it is decidedly flattened, its breadth very greatly exceeding its height. It really consists of two separate cocoons, the one inside the other. The outer one is spun of white silk, sometimes golden-tinged, and through it the much smaller and more compact white inner cocoon can be clearly seen. The latter is somewhat silky

in appearance, and exactly resembles white tissue paper;\* it is firm in texture, and so opaque that the enclosed pupa is quite invisible: at one end of it the larva spins, for the escape of the imago, a remarkable tube, which projects through the end of the outer cocoon. The two cocoons are so separate from one another that, after enlarging the exit-hole in the outer one, I was able, with the help of the forceps, to pull the inner one (containing the pupa) completely out through the aperture without tearing or damaging either.

The imagines, resulting from the larvæ received in 1901, emerged July 7th–12th of that year. Those from the larvæ received last year appeared June 14th–30th last. The species is much less particular than many as to the hour of leaving the pupa. My detailed observations show that individuals emerged at almost all hours of the day and night, but the period 9–11 a.m. was easily first, while the period 1–3 p.m. came second, in point of favour. The moths, in the very long and beautiful series before me, are singularly constant in facies, showing no variation worthy of mention except in point of size.

Norden, Corfe Castle:

January 14th, 1903.

#### A NEW SPECIES OF *LYCENID* FROM UGANDA AND LAKE VICTORIA NYANZA.

BY S. A. NEAVE, B.A.

*PENTILA CLARENSIS*, n. sp.

(Type ♂ from Toro Uganda, in the Hope Collection, Oxford University Museum).

Allied on the one hand to *P. amenaida*, Hew., and *P. mombasa*, Grose-Smith, and on the other to *P. pauli*, Staud., the affinity to the latter species being the more pronounced. ♂. Expanse, 38.5 mm.

*Upper-side*: pale fulvous orange, with a few black spots. Hind margins of both wings bordered with dull black. This border is smooth across the apex of the fore-wing but serrated elsewhere. There is also a narrow black border along the costa of the fore-wing. In both wings a terminal discocellular spot.

The *fore-wing* has three sub-costal black spots immediately above the upper border of the cell. Below the cell is a larger spot between the 1st and 2nd median nervules. There are no spots within the cell. Along the hind marginal border is a small discal row of two, or sometimes three minute spots. These are evanescent in the specimen from Nyangori.

The *hind-wing* has two spots on the costal margin, which may or may not be somewhat evanescent. Running parallel with the black hind margin is a discal row of small spots, usually five in number, of which the one nearest the costa is

\* Frey's description (Linn. Ent., xiv, 186) is almost identical, for he compares the cocoon to "silver-white silk paper."

much the largest. With the exception of the latter, these spots are evanescent in the specimen from Nyangori, in which however distinct traces of the corresponding spots upon the under surface of the wing are visible.

*Under-side:* paler than the upper-side; the whole of the hind-wing and the costa, apex and hind margin of the fore-wing being a dull buff. The rest of the fore-wing is of the same colour as the upper-side. The black border of both wings is absent, but there is a narrow black marginal line inside the black fringe. The fringe is interrupted opposite the internervular spaces by the spreading outwards of the ground colour. In the fore-wing these buff sections of the fringe are smaller than in the hind-wing where they may be much larger than the black sections. Within the fringe the narrow black line is thickened opposite the black sections, interrupted opposite the buff. A series of internervular black more or less linear markings occupies a submarginal position. In the hind-wings these markings are oval or moniliform spots; in the fore-wing they become more and more linear towards the apical angle. The spot nearest the inner margin of the fore-wing is especially rounded in one specimen from Toro and of exceptionally large size, recalling the appearance in *P. amenaïda* var. *nyassana*, Auriv. Each inwardly directed angle of the serrated margin on the upper-side coincides with the position of one of these marks on the under-side, as can be easily seen when the specimen is held to the light.

All the spots upon the upper surface are represented by corresponding ones (which are generally better marked) on the under-surface. This is especially the case in the discal rows of spots on both wings. That on the fore-wing comprises six spots, two of them being in the apical region, and that on the hind seven similar spots.

Additional marks on the under-surface are, in the fore-wing, a fourth distally placed subcostal spot, and in the hind-wing three large spots, placed just beyond the posterior margin of the discoidal cell.

In the reduction of the number of spots and in the sub-marginal streaks on the under-surface, *P. clarensis* exhibits an approach to *P. pauli*, Staud., but the reduction in the number of spots is not carried to the same extent, nor are the submarginal marks on the under-surface so linear in form as in that species. It is also interesting to note that in some specimens of *P. tropicalis*, Boisd., there is a feeble representation of the same serrated border to the hind-margin of the fore-wing which occurs in *P. clarensis*.

There can be but little doubt that *P. clarensis* provides an instance of Müllerian association with the very plentiful and widely distributed *Pardopsis punctatissima*, Boisd., to which it bears a marked general resemblance.

Three specimens of this *Lycenid*, all ♂'s, have recently been presented to the Hope Collection by Mr. Clare Aveling Wiggins, of Kisumu, after whom the species has been named. Two of them were collected by natives for Major Rattray in the Toro district in



Western Uganda, in November and December, 1900, and presented by him to Mr. Wiggins. The third specimen was captured by Mr. Wiggins himself at Nyangori, near the east shore of the Victoria Nyanza, November 1—8, 1902. Mr. Wiggins is a most ardent Entomologist, and has, within the last six months, sent several thousand specimens of *Lepidoptera* from this district to the Hope department.

In conclusion, I should like to express my thanks to Mr. H. H. Druce for his kindness in giving his opinion upon this species.

Magdalen College, Oxford :

May, 1903.

#### FURTHER NOTES ON SOUTH AFRICAN LEPIDOPTERA.

BY FRANCES BARRETT; EDITED BY C. G. BARRETT, F.E.S.

(Continued from page 83).

*Bombycomorpha bifascia*, Walk.—“These interesting, silky-looking moths came from hairy larvæ which, in great bunches, infested two little trees or bushes growing by the dam—a very pretty shrub with trifoliate leaves, having rounded leaflets, also an aromatic myrtle-like scent. Harry called my attention to these larvæ, so I put a net under the branch as it hung over the water, shook, and they dropped in numbers. I got a lot of them, and how they *did* eat! They spin great webs in the trees and as larvæ are altogether objectionable, but the moth is lovely and I do not remember to have taken it in any other way. The cocoons are very hard and earthy, but are not buried.”

[This moth is stout, the male  $1\frac{1}{2}$  inches in expanse, the female 2 inches, the thorax thickly tufted with downy silky scales, white; fore-wings silky-white, first and second lines broad and cloudy, pale umbreous; discal spot round, black; hind-wings silky-white, without markings. Larva (as figured) rather slender, not thickly covered with hair, the tufts of longer hairs thin, greyish-white, those along the sides depressed and forming a rather dense fringe; short hairs of the body more numerous, pale yellow; general colour grey mottled with white, a black spot on the face, another at the back of the head, and a series down each side; prolegs red-brown. Pupa thin skinned and very tender, glossy light red-brown, the segments rapidly tapering, and the cremaster short, blunt and rounded, hardly extending beyond the anal segment. In a hard but very brittle, thin cocoon, very similar to that of *Eriogaster lanestris*, but a little rougher; attached by the side to a stick or any neighbouring object. The eggs are laid in dense masses around a twig of the food-plant quite in the manner of *E. lanestris* or *Clisiocampa neustria*.]

*Henucha Delegorgui*, Bdv.—“This specimen was found at Libodi in very wet and cold weather; and it looked so like a withered leaf blown to the way-side that it is a wonder it was not trodden upon; indeed, Edward seemed about to touch it

with his foot, when E. cried out 'Let me see what it is.' She describes it as being then all crumpled up, yet they spread themselves out, when perfect, wide and ridged; and I think that it can have but just emerged."

[This rare and beautiful moth is of about the size and shape of the male of our *Saturnia carpinii*, and in some small degree reminds one of it, but in place of the ocellated spot in the fore-wings of the latter, it has a curiously forked and curled hyaline streak; its hind-wings are rosy-red at the base, brown beyond, and have a large round orange spot, broadly ringed with black, and containing a slender hyaline and black C-mark. Its previous states appear to be unknown.]

[*Saturnia apollonia*, Feld.—Referring to vol. xxxvii, page 192.—Figures of the larva have now come to hand, in size, form, and even colour, most curiously calling to mind that of *Saturnia carpinii*, yet on examination, totally different. This larva is decidedly plump, with the segments full and rather deeply divided, and the head and anal segment small; deep full green, the inter-segmental spaces, when visible, much whiter; down the dorsal line is a series of small purple-red >-shaped marks, each with its apex pointing backwards, one placed on the front of each segment; on each side are two rows of conical spikes of a shining silvery appearance, but tinged with purple; at the base of each spike of the lower row is a deep black spot, surrounded by a yellow ring; spiracular stripe undulating, yellow, and from it a yellow band crosses the front of the second, and also of the third segment; legs and prolegs green. Food, *Mimosa*].

*Psalis securis*, Hüb.—"A little boy, visiting at Nggeleli, sent me three cocoons. One moth had emerged. He says that the caterpillars were very pretty—bright yellow and hairy—found upon grass, and fed upon the grass of the 'sour veldt.' The moth comes occasionally to light on a dark night. I had hung the hurricane lamp out in the veranda, and two precipitated themselves against my light dress, almost upon the ground."

[This very neat-looking insect bears some resemblance to *Rigema ornata*, but a very much closer one to a species to which it is in no respect related—*Meliana flammea*. In the shape of its fore-wings and in their division longitudinally into two colours, the more ochreous toward the costa, the greyer on the dorsal area, with a darker stripe between them, the mimetic resemblance, if it may so be called where there is no possible mimicry, is remarkable. The antennæ are, of course, totally different, being in this species rather short, and broadly pectinated. The cocoons sent are very neat, fusiform, semi-transparent and pale yellow; the pupa-skins thin, glossy, thinly hairy and almost without sculpture; the cremaster a strong spike.]

*Acanais subretracta*, Walk.—"Looking for more larvæ of *Myrina ficedula* I found three or four of another kind, which I also figured in a hurried kind of way. Its greatest peculiarity was the aptitude with which it dropped the moment that one took hold of the leaf that it was upon. These larvæ were feeding in broad daylight, though they seemed to prefer a moist cloudy day. Two others were found on fig. This larva is not very hairy, its head indian-red; body pale olive-brown, with a darker brown dorsal line, and subdorsal black streaks; the spiracular line broad, clearly white or yellow in a curved space on each segment. The later specimens were of a more dull brown. No very long time was spent in the chrysalis state. To my very great satisfaction they turned out to be the 'Epaulet moth.'"

[This is a very handsome *Arctiid*, three inches in expanse, antennæ long, black, pectinated in the male; thorax and abdomen stout, rich yellow, with a few scattered black dots; fore-wings long, the edge of the basal portion twice angulated, forming a sort of large epaulet patch, rich yellow with numerous black dots, and extended on the costa; the hinder area cut off by a sharp division of the colour; pale or dark purplish-brown, with paler lines on all the nervures; hind-wings yellow. Pupa rather cylindrical, pitchy-brown with a most brilliant gloss, and almost totally without sculpture; anal extremity thick and very much rounded; cremaster a minute point. In a rather thin but strong silken cocoon, either covered with sand or attached to *débris* on the ground].

*Polymona modesta*, Felder.—“This was a very interesting larva, but was found at a time when I was quite unable to paint its portrait, so I made a pen and ink sketch on a label. It was a hairy larva of a dull brown, with a black dorsal stripe and pink legs; face orange-brown; on each side from the back of the head a long slender tuft of hairs; on the back a series of lighter dots. It was found on a river-side climbing-plant having serrated leaflets. This, the natives say, will sting if you gather it!”

[This *Arctiid* has a curious male; its broad black-brown fore-wings have upon them a very striking and conspicuous white *figure 4* and beyond it a white transverse line; hind-wings white, with a grey border. The female is decidedly larger, its fore-wings reddish-brown, with several white spots on the base and dorsal margin, and a larger white dash near the middle of the wing—but *no* appearance of the *figure 4*; hind-wings pale reddish-yellow.]

*Metarctia rufescens*, Walk.—“This I have great pleasure in sending. I painted its larva last season and then it died. Another was found among rubbish, and it pined away and died. The one which produced this moth was picked up by E. on a very rainy day, *in* the house. I found that it ate the juicy creeper from the veranda, which has a purple shade underneath the leaf (*Tradescantia*!). It is a rapid traveller and likes to hide among dead leaves under a hedge.”

[The larva figured is rather elongated, head and body umbreous-brown, with obscure darker spots, the dorsal surface thickly covered with extremely long black hairs which curve somewhat backwards; on each side is a row of brown spots with short hairs, radiating so as to produce a star-like appearance; above the legs are other such spots with conspicuous radiating hairs; legs black. The pupa is stout, shining red-brown, in a loose cocoon, which is composed of the long hairs of the larva, united with a little silk, and placed in the curve of a dead leaf on the ground. The moth—an *Arctiid*—bears a singular resemblance in size, colour and general appearance to *Phragmatobia fuliginosa*, but its hind-wings are not so pink, nor are they bordered with black.]

*Diacrisia flava*, Wallgr.—“I have found larvæ, and fed them up on yellow thistle, and send a figure; now (November) I am finding larvæ on knapweed, and others feeding on a kind of hawkweed having a milky juice.”

[The larva is very bright and pretty—moderately elongated, thinly covered with slender tufts of brown hairs, the longest of which are upon the anal segment; head orange-red; body rich yellow, with a bright white dorsal stripe, interrupted on every segment by the yellow ground colour; on each side of it a broad, similarly

broken, black subdorsal stripe; spiracular stripe yellowish-white; under-surface tinged with pink; side tufts of hairs orange-brown; feet orange-yellow. Pupa very compact, bluntly rounded behind, cremaster hardly perceptible—a minute point; general colour glossy red-brown; hinder segments rather blacker. In a thin tightly-fitting cocoon of dull yellow silk; among rubbish on the ground. The moth is closely allied to *Spilosoma*—especially to *S. tubricipeda*, though its antennæ are smaller—wings pale ochreous or pale yellow, without markings; the abdomen rich yellow, with dorsal and lateral series of deep black bars.]

*Cænobasis amena*, Feld.—“After I had packed your box I opened it again to put in a lovely little green moth, with the smooth egg-like cocoon from which it had just emerged. The lid was hanging to the cocoon, but dropped off in the packing. These cocoons are not easy to find until after the moth has emerged, being streaked with greyish-green like a bird’s-egg; afterwards they bleach white and become very conspicuous; there are many empty cocoons to be seen.”

[These cocoons are quite as round, and as smooth as a bird’s-egg, about the size of the egg of a wren or titmouse; and are fixed firmly to the side of a twig of *Mimosa*, upon the tree—hence their conspicuous appearance when white and bleached. Of those before me some are streaked and shaded with brown. To enable the moth to emerge a lid is thrust off, perfectly rounded and smooth-edged, and probably cut from the inside. In emergence the limb and antenna covers are partially detached, and fill the opening with a confusion of fragments of a shining light chestnut-brown. The moth, a pretty Limacodid, is robust, the thorax vivid green with yellow patches at the back; the fore-wings short, rather broad, bright green, with a white cloudy stripe running down each of the three principal nervures, and a white shade along the hind margin—which also is sharply dotted with black. Hind-wings rounded, white, with a marginal row of black dots.]

Later.—2nd April, 1903.—“I have been greatly interested in these fairy-like little green and white larvæ up among the leaves in the *Mimosa*-trees at night. I was searching for the larva of *Sphingomorpha* when I found the first of these. One was high up in the *Mimosa*, but I got a crooked stick, and pulling the branch down, secured the prize. By diligent searching I found two more in the same tree, and close by, the little hard cocoons, evidently just formed. These cocoons are common, but no one of us had ever seen the beautiful larvæ before. I think that they hide in the daytime, and that their close resemblance to the foliage aids them. Then they remain very quietly in one place, and feed only at night. I found the first just at Christmas, and in less than a week they had spun their cocoons. I saw one of my captives just in the act, it was of a lovely pale green, but turned brown in the course of the next day. All these spun upon the same twig. From the cocoons which I gathered upon the trees I reared five or six of the moths, and let them bang about under a glass shade, to see whether I could secure any eggs, so of course they spoiled themselves; but presently I found long trails like fir-needles on the glass, mostly grouped together, but one which stood alone was  $3\frac{1}{2}$  inches long. Very shortly there were tiny black larvæ upon the glass, and I thought that I should succeed in rearing them, but only one survived, and it was dwarfed. It has spun up, but not a perfect cocoon. I cannot give you a notion how lovely the little caterpillars are when alive. I sketched two which I caught just lately, at the end



of March on a misty night, just as before, making for the tender twigs of the *Mimosa* for their supper; were I an artist, I might indicate how like they are to their surroundings. Their spikes are like moss, the bodies straight, and round as a piece of stick, and all spikey. There are about twenty-eight moss-like green spikes, ten on the head, six on the end, and a row of small ones over the legs. There is a row of white spots, sharply edged with blue-green, along the middle of the back, and a row of of white elongated splashes on each side; between these two rows is a bright yellow stripe; rest of the body, with the legs, green. They seem to assume a red tinge just before spinning up. The legs are almost imperceptible. It seems to take hold all along the body as it walks, the legs swelling out and retiring as it moves. They are legs, but look like little green suckers. The first moths emerged very quickly, and all in a few weeks.

*Crocidotomia binotalis*, Zell.—“The larvæ are dirty-greenish looking objects, smooth, very slender, with brown dorsal and yellow spiracular stripes, very sluggish and without noticeable hairs. Found feeding in the hearts of cabbages—we had to break the cabbages open to find them.”

[Dead pupæ and numerous cocoons are furnished. The pupa is very glossy, almost without sculpture, but the limb, antenna and wing covers very well marked; the abdomen short, with the anal segment a little thickened, smoothly rounded, and not provided with any noticeable cremaster. In a tough cocoon, sometimes in the ground covered with earth, or else in any twisted up bit of soft paper or gauze. The moth, which somewhat resembles our *Pionea stramentalis* and *P. margaritæ*, has, in the male, a singular erect tuft of long grey-black scales arising perpendicularly from the arch of the costa, near the base of the fore-wings.]

*Myelois caradrinella*, Zell.—“These webs on the bottom branches of *Mimosa* bushes or on trailing branches of young *Mimosa* trees, have often excited my interest, but I could find nothing within. One day, walking with some friends I gathered a sprig, and found upon it a long thin green larva, and by plucking more sprigs of the same tree have secured a few, of which I send the resulting moths. The larvæ would eat the *Mimosa* when very dry, and never showed themselves at all; they must be strictly night feeders.”

[From the clustered masses sent it is evident, I think, that this larva makes a tube among (apparently) the dead, fallen leaves and hard prostrate twigs of the *mimosa*. If so, there is a sufficient explanation of its secretiveness. Whether its food consists of the living, or the dead leaves is a question for further observation, but very possibly it may prove to be the latter. The pupa, which is rather slender, smooth and moderately shining, though not brilliantly so, is light red-brown, rather darker behind; its anal segment thickened and rounded behind; the cremaster a blunt black knob. It is contained in a slight silken cocoon in the mass of rubbish collected round rough larva-tubes. The moth with narrow fore-wings, of a slate colour and white hind-wings, bears a remarkable resemblance to our *Myelois ceratoniæ*. It comes constantly to lighted windows at night in wet weather.]

*Tortrix (Pandemis) reciprocana*, Hpsn.—“I noticed one day two Oleander leaves joined together, and found a chrysalis between, so I put it under a shade. To-day I noticed what seemed like a shield or a bit of dried leaf, but it moved, and then I saw what I had secured.”



[That the larva had spun up between Oleander leaves must not, I think, be taken as proof that it had *fed* upon this plant. The pupa looks quite like that of our own *T. Podana* or *T. ribeana*, thrust out of the web in the same manner, and split down the back. The moth is of about the size of *T. ribeana*, and somewhat resembles it.]

*Adela natalensis*, Zell.—“One evening I went across the river to the garden on the other side. Going along a winding path by the river just as the sun was setting, I emerged into an opening, where was a stretch of long grass with a fringe of *Mimosa* trees, and there were clouds of these tiny ‘longhorns’ flying for a few minutes just over this grassy patch. I got three or four at a time in the net. Their flying was most curious—in curves with a drop—as though their long horns were too heavy for them.”

[This pretty little species has fore-wings dull silky purple, with a narrow, transverse, straight yellow band across the middle. The antennæ are very long, and nearly white.]

*Psecadia livida*, Zell.—“I noticed a web in a low bush, after rain, and under its shelter, several little larvæ. They were very nimble, but I secured some of them, and they fed well. The web in which they live is in the centre of the food-plant, and they drop readily if disturbed. The first moths are now (November) coming out, while there are still larvæ feeding. A ground spider had made his hole and web just beneath them, but I think I robbed him of his intended prey.”

[This is a neat little moth, about an inch in expanse, the fore-wings narrow, silky yellowish-white, with six black dots; the hind-wings silky-white; the abdomen yellow.]

*Psecadia oculigera*, Mschl.—“This larva was so like that of *P. livida* that I nearly put it with them. Both species were feeding on the same species of tree, but not on the same bushes. It is the same plant as that from which I reared those *Smerinthus Grayi* for you.”

[This is a much more beautiful species, of about the same size, the fore-wings narrow, slate-grey, with a dozen or more black dots, those in the middle area ringed with white; the hind-wings bright yellow with a black tip.]

#### HYDROPORUS BILINEATUS, STURM, AN ADDITION TO THE BRITISH LIST.

BY A. J. CHITTY, F.E.S.

Mr. E. A. Waterhouse has kindly given me an opportunity of adding a species of *Hydroporus* to the list of British beetles, and of correcting an erroneous record of the capture of *H. granularis*, L., at Sandwich in 1891.\* The beetle in question is *H. bilineatus*, Sturm, which occurred on the 29th—31st March, 1891, in the ditches behind the sandhills at Deal, on the road to Sandwich. As Mr. Waterhouse

\* Ent. Mo. Mag., xxvii, p. 332.

points out, "The two species are somewhat alike in size and markings, but very dissimilar in form: *H. granularis* is almost oval, in *H. bilineatus* the widest part of the elytra is behind the middle, the thorax in the latter is a little less contracted in front, and the insect is more depressed and longer, giving it a very different appearance. The inner yellow line is straighter and runs closer to the base of the elytra." It may also be noted that the puncturation of the elytra is distinctly coarser on the disc. The species was fairly abundant in one ditch when found by me, and can, I have no doubt, easily be found by any one who will look for it at the proper time; in fact, it is probable that the records of *H. granularis* from Deal relate to this insect.\*

Dr. Sharp's description of *H. bilineatus*, Sturm, taken from his work on the Dytiscidae (pp. 452, 453) is as follows:—

"*Elongato-ovalis, parum convexus, parce subtiliter punctatus et pubescens, nigricans, elytris versus latera lineis longitudinalibus duabus testaceis, externa lata et sæpius linea fusca divisa, pedibus rufis, antennis fuscis basi rufo, prothorace versus latera stria impressa abbreviata, extus eandem testaceo; corpore subtilius nitido, coxis posterioribus parce obsolete punctatis. Long., 2 $\frac{2}{3}$ , lat., 1 $\frac{1}{2}$  mm."*

27, Hereford Square, S.W.

May 8th, 1903.

#### TYPES OF SIPHONAPTERA IN THE DALEIAN COLLECTION.

BY THE HON. N. C. ROTHSCHILD, M.A., F.L.S.

"The History of Glanvilles Wootton"† contains the description of twenty-two new species of *Siphonaptera*. In the "Zoological Record," volume xv, p. 245, 1878, under "Insecta," Mr. W. F. Kirby has criticised these additions to the British List. Since that date these new species have, so far as we know, been entirely ignored, no reference to them having been made by any of the students of this most neglected order. In the present article the author has attempted to investigate the validity of these twenty-two species. After an exhaustive examination of the types of most of these species, which Mr. Dale most kindly lent for the purpose, the author has decided to reduce the majority of the species in question to the rank of synonyms. A few of the names, however, must be retained, and in consequence the general synonymy of the group is affected. The types of all the species mentioned were secured in the parish of Glanvilles Wootton.

\* Since writing the above Mr. Donisthorpe and I have been to Deal in search of it, and of *Dyschirius extensus*, Putz., taken by me in 1890—1892, but have failed to secure either. *Laccophilus variegatus*, Sturm, was abundant in some of the ditches.—A. J. C.

† "The History of Glanvilles Wootton in the County of Dorset, including its Zoology and Botany," by C. W. Dale. London: Hatchards, 1878.

Page 290, No. 6, *Pulex gliris*, Dale.—“On dormice.”† The Daleian collection contains two male specimens of this species. One is a male of *Pulex erinacei*, the other a male of *Ceratophyllus sciurorum*. The name *gliris* must consequently be reduced to a synonym.

Page 291, No. 7, *Pulex furoris*, Dale.—“On ferrets.” This species was described from a single male specimen, which on further examination proves to be *Ceratophyllus fasciatus*. The name must consequently be rejected.

Page 291, No. 8, *Pulex mustelæ*, Dale.—“On weasels.” The type of this species is a female, and belongs to the species named *mustelæ*, independently by Dr. Wagner (Hor. Soc. Ent. Ross, xxxi, p. 565, 1898). The type of *Pulex mustelæ* is consequently in the Daleian collection.

Page 291, No. 10, *Pulex cuniculi*, Dale.—“On rabbits.” The type of this species, a female, the name of which must be retained, is in the Daleian collection. This is the insect usually known by the name of *goniocephalus*. (Taschenberg, “Die Flöhe,” p. 82).

Page 291, No. 6, *Ceratophyllus sorecis*, Dale.—“On shrews.” The type of this specimen is a male. According to the laws of priority the name *sorecis* must be substituted for *gracilis*, the name by which this insect is usually designated.

Page 291, No. 7, *Ceratophyllus minor*, Dale.—“On moles, *Talpæ*, Curt., which is almost double the size, has not been seen in the parish.” Of this species there are three specimens, one male and two females, and they are identical with the above mentioned *Ceratophyllus sorecis*.

Page 291, No. 1, *Ceratopsyllus gallinulæ*, Dale.—“In moorhen’s nests.” The type of this species is a female. The name *gallinulæ* has to take priority over that of *Newsteadii*, the name under which this species was recently described by the author (“Ent. Rec,” vol. xiii, p. 284, 1901). This insect is not the same as *Ceratophyllus Gareii* described by the author from *G. chloropus*. (Ent. Mo. Mag., n. s., vol. xiii, p. 255, 1902).

Page 291, No. 2, *Ceratopsyllus monedulæ*, Dale.—“In jackdaw’s nests.” There are three female specimens of this species in the Daleian collection; they are all *Ceratophyllus gallinæ*, and the name must consequently be rejected.

Page 291, No. 3, *Ceratopsyllus turdi*, Dale.—“In song-thrush’s nests.” This is a composite species of which there are two specimens, the male representing *Ceratophyllus gallinæ*, the female *Ceratophyllus gallinulæ*.

Page 292, No. 4, *Ceratopsyllus viscivora*, Dale.—“In stone-thrush’s nests.” The type of this species appears to have been lost.

Page 292, No. 5, *Ceratopsyllus merulæ*, Dale.—“In blackbird’s nests.” There are five specimens of this species. One male and two females are *Ceratophyllus gallinulæ*, while two females appear to be identical with *Ceratophyllus gallinæ*. The name *merulæ* representing as it does a composite species must in any case be rejected.

Page 292, No. 6, *Ceratopsyllus garruli*, Dale.—“In jay’s nests.” The type of this species is a female, and is identical with *Ceratophyllus gallinulæ*.

† The few words of Latin diagnosis attached to the original indication for each form are not reproduced here.

Page 292, No. 7, *Ceratopsyllus pyrrhulæ*, Dale.—“On bull-finches.” The single specimen of this species must, like the preceding one, be referred to *Ceratophyllus gallinulæ*. The name is consequently a synonym.

Page 292, No. 9, *Ceratopsyllus citrinellæ*, Dale.—“In yellowhammer’s nests.” The three specimens of this species are, like the preceding two, referable to *Ceratophyllus gallinulæ*.

Page 292, No. 10, *Ceratopsyllus pratensis*, Dale.—“In meadowpiper’s nests.” This name likewise is a synonym, the two specimens being identical with *Ceratophyllus gallinulæ*.

Page 292. No. 11, *Ceratopsyllus atricapillæ*, Dale.—“In blackcap’s nests.” The single species, a female, is identical with *Ceratophyllus gallinulæ*.

Page 292, No. 12, *Ceratopsyllus cinereæ*, Dale.—“In whitethroat’s nests.” This species is again a composite one, and the name must consequently be rejected. Two of the males and the three females are identical with *Ceratophyllus gallinulæ*, while the third male is indistinguishable from *Ceratophyllus gallinæ*.

Page 292, No. 13, *Ceratopsyllus arvensis*, Dale.—“In skylark’s nests.” The type of this species has unfortunately been lost.

Page 292, No. 14, *Ceratopsyllus trochili*, Dale.—“In willow-wren’s nests.” The type of this species has also been lost.

Page 292, No. 15, *Ceratopsyllus candati*, Dale.—“In long-tailed-tit’s nests.” There are two females of this species which is identical with *Ceratophyllus gallinulæ*.

Page 292, No. 16, *Ceratopsyllus spini*, Dale.—“Taken by my father off a siskin, February 9th, 1863.” The single female specimen of this species is identical with *Ceratopsyllus gallinæ*.

Page 292, No. 17, *Ceratopsyllus ænas*, Dale.—“In stock-dove’s nests.” The two specimens of this species are identical with *Ceratophyllus gallinæ*.

Page 293, *Ceratopsyllus palumbi*, Dale.—“In wood-pigeon’s nests.” There are two male specimens of this species. The one is an undoubted example of *Ceratophyllus sciurorum*, while the other represents a new and obviously unrecognised form. The name *palumbi*, belonging as it does to a composite species, and in consequence the new species should be redescribed.

In the Daleian collection there are two specimens received by Mr. J. C. Dale, from Mr. Curtis, of Curtis’s own species *Ceratophyllus elongatus*. These specimens are identical with the insect referred to as Curtis’s *elongatus* by the author. (Novit. Zoolog., vol. v, p. 542, 1898).

From these facts it will be noted that the Daleian collection contains four types of British *Siphonaptera*. These four species are well known at the present time, but the alteration of some of the names becomes necessary. *Pulex cuniculi* is the correct name for the species now known as *Pulex goniocephalus*. *Ceratophyllus mustelæ* remains the same, although the author has to be changed from Wagner to Dale. *Ceratophyllus gallinulæ* will henceforth be the recognised name for *Ceratophyllus Newsteadi*; while *Typhlopsyllus sorecis* will have to replace *Typhlopsylla gracilis*.

HISTORICAL NOTES ON *CHRYSOPHANUS DISPAR*,

BY C. W. DALE, F.E.S.

Dru Drury in a letter to John Walcott, written on July 7th, 1786, and published in the "Transactions of the Entomological Society of London," vol ii (1837—40), Proceedings, p. 59, writes "*Hippothœ* is English, but exceedingly scarce; said to be found in Cambridgeshire, about Tensford, at this time of the year." Donovan in 1798, stated that his specimens were met with in Scotland; and Samouelle, in his "Entomologist's Compendium" (1819) gives "near Aberdeen" as the locality, but Haworth in 1803 had already considered this information to be erroneous. Haworth, however, states that Hudson took the species in Wales. I think it is far more likely that Hudson took it in the Fen country.

The first specimen known to have been taken at Whittlesea Mere—a female—was obtained by Thomas Speechley, an old boatman in my father's employment, on August 4th, 1819. My father had just returned from Whittlesea Mere without meeting with any, and told Speechley to take and send to him any red-looking butterfly that he saw. When Speechley took some more, the other boatmen gathered round him and asked what he was doing? "Catching butterflies worth a guinea a-piece," he replied. They said that they would like that work too. Before my father's death in 1872, these butterflies were actually selling for a guinea a-piece, but how astonished he would have been at the idea of their selling for £6 to £8. The next year my father sent Benjamin Standish down and gave him £2 for his coach expenses, of which I hold the receipt. The following extracts from letters from Standish to my father may be of interest—"Yaxley, August 5th, 1820. Sir,—I received your letter on July 31st, and it brought me the £2 quite safe. I started at Snow Hill, London, on Wednesday afternoon, August 1st, at 6 o'clock, and arrived at Yaxley the next morning at half-past 6 o'clock. That day Mr. Speechley took me to the spot where he took the Large Copper, but the wind blew so very strong, and there was so little sun that we could not see any." August 9th, 1820. "I have the pleasure of informing you that after having been here seven days, I have found out a famous place for the Large Copper, and have taken three females, but they are not so fine as I would have wished. Mr. John Drake, of the 'Chequers' Inn, where I stayed, told me that a man lodged there who worked in the fens, cutting reeds, who was the most likely person to know the best localities. However, he would not tell me, and said that he did not see why he should not take them himself and make money of them as well as Mr. Speechley. I offered him two shillings a specimen for all he took, but it was of no use."

It soon got wind among the folks at the Mere that they were worth two shillings each in London, and two men, old Downie and another, came from Cambridge, and secured a large quantity, which they took to London in boxes-full and sold them. Mr. Bond in the "Entomologist," vol. xiii, p. 193, states that the imagines were to be purchased from the collectors at from 3s. to 4s. per dozen, but Standish used to sell them at 10s. a specimen.

My father went down to Whittlesea Mere in 1826, and took his first specimen, a fine male, close to Warble Pit on June 25th. He also paid other visits in July, 1827, and July, 1833.

Both Curtis and Stephens give a full account of its occurrence, and the former figures the larva in his 2nd edition.



Other localities for *C. dispar* besides those aforesaid mentioned, were Stilton Fen, Migg Mere, Trundle Mere, and Sawtree Fen, in Huntingdonshire; Boggleswell, in Cambridgeshire; Bardolph Fen in Norfolk; and Benacre in Suffolk. Mr. Haworth, in a letter to my father, dated from his brother-in-law's, Mr. Seales, of Beecham, near Wells, in Norfolk, writes, "I went round from Wisbeach to this place, passing the old habitats of *Papilio dispar*, now waving with corn." Mr. Haworth had an estate at Halvergate, in which he took *Argynnis Lathonia*.

In the "Entomologist" for 1840-2, p. 156, Mr. Doubleday records the larva of *C. dispar* as being very plentiful in Holme Fen between June 3rd and 20th, 1841. Mr. Dawson, in the "Zoologist" for 1848, p. 2113, writes, "*L. dispar* has become very nearly extinct, I could only hear of five larvæ being taken, and very few of the perfect insect."

Mr. Stainton, in the "Transactions of the Entomological Society of London" (2), v, p. 231 (1860) writes "*C. dispar* used to be abundant in Wittlesea Mere, but since that was drained, causing corn-fields to wave where reeds had formerly held undisputed sway, the insect has disappeared. Similar fen districts still exist in Norfolk and Suffolk, but no recent captures are known, although the insect has been sought there in its most likely haunts."

Good varieties of this species are scarce. The best I know of are (a) A female in my own collection almost entirely black, blacker even than the var. *Eleus* of *C. Phlaas*. This my father received from Mr. Simmonds in 1837, by whom it was bred; (b) one approaching the var. *Schmidtii* of *C. Phlaas*, having the hind-wings inclining to silvery towards the hind margins. This specimen was in Mr. Sidebotham's collection and is now in the National Collection at South Kensington; (c) a female, with the discoidal spots elongated, is in the Doubleday Collection at Bethnal Green.

The hind-wings of some specimens are almost black, one being hardly irrorated with copper at all, the broad upper band standing forth very distinctly. In others the copper colour greatly preponderates. One that Mr. Standish took had unusually large spots on the under-side.

My father, in "Loudon's Magazine," vol. vii, gives an instance of variation in shape of the upper wings of two males, those of one being long and acute, those of the other short and obtuse.

There is also considerable difference in size—the smallest specimen in my collection measures one inch and five lines across the wings, and the largest two inches and two lines.

In the Oxford University Museum are two specimens of a species of *Ichneumonidæ* bred from *C. dispar*, which are apparently *Limneria mutabilis*.

Glanvilles Wootton: 1903.

*Homocidus nebulella*, Hb., bred from *Senecio jacobææ*, L.—Having failed to find, in the works at hand for reference, any mention of *Senecio jacobææ* as one of the food plants of *Homocidus nebulella*, I think it may be of interest to record the fact that Mr. A. Thurnall bred, in July last, a fine series of imagines, for the identification of which I am responsible, from larvæ found, rather plentifully

feeding in the flower—and young seed-heads of this plant, in Surrey, during the previous August. As regards the recorded food-plants of *H. nebulella*, so far as I can at present ascertain them, von Heinemann, Kleinschmet. Deutsch. u. d. Schweiz, I, ii, 197 (1865), and Frey, Lep. d. Schweiz, 279 (1880), only mention *Carduus nutans*, while Ragonot, Ent. Mo. Mag., xxii, 26 (1885), gives “thistles,” and Meyrick, HB. Brit. Lep., 378 (1895), simply enters “*Carduus*.” The larva is said by Merrin, Lep. Cal., edn. 2, 170 (1875), to feed in “heads of thistles, also China aster,” and by Leech, Brit. Pyral., 92 (1886), to occur in “heads of asters, thistles, and other Compositæ,” the latter author adding (p. 93), that according to Baron v. “Nolken” (*rectius* Nolcken), it feeds in flowers of *Tanacetum vulgare*. Sorhagen, Kleinschmet. d. M. Brand., 56 (1886), gives a list of five different food-plants, viz., *Carduus nutans*, *Cirsium oleraceum*, *C. canum*, *Linum catharticum*, and *Tanacetum vulgare*, with the names of the authorities who are responsible for the records. Coloured figures of the larva of *H. nebulella*, and of the four other British representatives of the genus *Homœosoma*, may be found in Buckler’s “Larvæ,” ix, Pl. clvii (1901).—EUSTACE R. BANKES, Norden, Corfe Castle: April 17th, 1903.

*Pachetra leucophæa*, View., reared from the egg.—The vast majority of the numerous attempts, made by British entomologists, to rear *Pachetra leucophæa*, having ended in failure, it is satisfactory to be able to add one more to the lamentably short list of successes. On November 20th last, I received from my kind friend, Mr. W. R. Jeffrey, ten larvæ, perhaps about two-thirds grown, resulting from ova laid by a wild female taken in Kent some six months previously. They were fed on *Dactylis glomerata*, but in spite of my “forcing” them to a moderate extent, their growth was extremely slow, and in course of time four died off—the last on March 4th—without attempting to spin up. The most forward larva actually assumed the pupal state during the night of January 8th, and by the end of the month three others had spun their cocoons, while the remaining two healthy larvæ followed their example during the first half of February. Dr. Chapman found that his larvæ made their cocoons only just beneath the surface of the sawdust that he gave them (*vide* Ent. Rec., ii, 60); mine, however, all constructed them much deeper down in the bran with which they were supplied, two out of the three cocoons, on which I made exact notes, being situated at  $1\frac{1}{4}$  inches below the surface, while the third was spun tightly against the floor of the cage, on which the bran rested to a height of quite  $2\frac{1}{4}$  inches. The larvæ delighted to burrow into the bran, and live concealed therein during the day, from the time that it was first added to the furniture of their cage.

The six pupæ yielded four male and two female moths, of which four were perfect, whilst one of each sex had deformed wings. They emerged, February 10th—March 18th, in the following order; ♂, between 10 a.m., and 10 p.m.; ♂, between 9 a.m., and 1 p.m.; ♀, between 10.45 p.m., and 7.30 a.m.; ♂, between 7.15 a.m., and noon; ♀, between 10.15 and 11 a.m.; ♂, between 10.15 and 11.15 a.m.

Such excellent descriptive notes on the larva by Messrs. Buckler, Chapman, and Jeffrey, and on the pupa by Dr. Chapman, have already been published, that I will only add that the pupa, when it has only just assumed this state, is entirely

whitish primrose-yellow; the abdomen, both dorsally and ventrally, begins to darken more quickly than the other parts, soon showing traces of the tawny-ochraceous colour, which the whole pupa assumes before finally deepening to the "rich red brown" hue mentioned by Dr. Chapman in Ent. Rec., ii, 61.—*Id.*: April 18th, 1903.

*Tinea imella* in *Dunbartonshire*.—I first noticed this species in mid-June, 1901, fairly common in a sand-pit at Dillichip. My only previous captures amounted to five specimens—one at Nobleston, three at Ladyton, and one on the hillside among heather! I was rather surprised, therefore, when I came across the species in another part of the district altogether, and in numbers. I took a good many specimens (sixty I think) the first week I discovered it. I was more particularly interested in the moor species. I had but little time to study more than the imago stage of the insect. They were particularly attached to one spot or patch of grass about half-a-yard square. It was an easy matter sweeping five or six into the net by a quick jerk through the grass. Most of the specimens taken were apparently newly emerged, and in one or two cases the wings were not fully extended. Short, jerky flights from one blade of grass to another, sufficed in the matter of flying for most of the insects, but I have met with odd specimens flying steadily along about three feet from the ground, and a good way off the "general body." If I tried to box specimens from the blades of grass, which I did upon several occasions, it generally resulted in the insects seeking safety, not in flight, but by dropping down among the roots, and doing all they possibly could to burrow under the ground. Some of the females I obtained deposited ova. These were at first of a pure white colour, but after a time they turned greyish. They are somewhat irregularly honeycombed longitudinally; the ridges starting from a central cell on either end. In shape the eggs are elongated, and regularly rounded at the ends, and about twice as long as broad. I did not obtain any fertile ova, and as I have a few of these eggs, I shall send on one or two to any one who is interested in this branch of entomology, and cares to write to me here.

At Mr. Barrett's request I made an examination of the spot that I felt sure was the source from which the specimens emanated during the last two years. I was at least successful in establishing beyond doubt that the larvæ had fed up there, and also in finding what they fed on. I was not rewarded by finding larvæ, but I may still have an opportunity of doing so, unless, as is not seldom the case, the species has disappeared from the locality. The surface of the ground was strewn with empty pupa-skins, in most cases the last segments of which were still in the apertures of the cocoons or tubes in which the larva had pupated. These cocoons extended to almost an inch below the surface, and were composed of an extremely tough white silk, in most cases intermixed with pieces of the food on the outside, and with the earth adhering firmly thereto. I found no cocoons with pupa, but in all I opened I found the cast-off skins of the larva that had pupated therein, and as previously stated, the cast-off skin of the pupa almost invariably was to be found protruding from the upper end of the tube. These cocoons were in bunches closely woven together, but all independent of each other, and with no internal connection. The food, for which I had a good deal of searching, owing to the small portions that were left, seems to have been a knitted woollen stocking, and must

have been partly buried, and overgrown with grass. I found a portion about two inches square some way beneath the surface and where the cocoons were thickest.—J. R. MALLOCH, Bonhill, Dumbartonshire: *April*, 1903.

*Hertfordshire County Museum, St. Albans: a request.*—A collection of British *Lepidoptera* is being formed. I shall be thankful if collectors will send me any duplicate specimens they may have to spare. Hertfordshire insects will be specially welcome.—A. E. GIBBS, Hon. Curator, Kitcheners' Meads, St. Albans: *April*, 1903.

*Preserving the colour of Dragon-flies.*—More than twenty-five years have passed since I adopted the following method of preserving dragon-flies; the result has stood the test of time, many done then have been in the Devon and Cornwall Natural History Museum, Plymouth, for exhibition, upwards of twenty years. Directly after death, clean out the contents of the thorax and abdomen. To do this, obtain a long darning-needle, thread it with a short piece of fine cotton, tie the ends together so as to form a loop; sling into this loop one or more strands of cotton, or silk, according to the size of the insect; for the largest, four strands may be used, this would give eight threads in the thorax and abdomen, taking care to select the cotton or silk of the *predominant colour* of the fly; then pass the needle into the fly, directly under the head, through the thorax and abdomen, pulling the cotton or whatever is used through the body until it comes out quite clean, then slide the abdomen up a little, cut off the end of the material used, pull the abdomen down to cover it, then cut off close under the head, leaving the remainder in the body. The fly will then be ready for setting. If it be thought necessary to use a preservative against insect attack, damp the cotton with *carbolic acid* before using. For the small species use a smaller needle with only one double thread.—G. C. BIGNELL, Saltash: 1903.

[Mr. Bignell has obligingly sent me a ♂ each of *Pyrrosoma minium* and *Agrion puella* prepared by his process. The result is fairly good so far as form and colours are concerned; in the abdomen the colour of the enclosed silken threads is very evident, and it must not be forgotten that the *blue* in different species of *Agrion* probably differs in exact tint in each species *in life*. The anal parts in the two examples sent are damaged or distorted. If the plan is to be a complete success it will be necessary in all cases to avoid this, and also to avoid damaging the genitalia of the second segment in the males, and the vulvar scale on the 8th ventral segment of the females, in *Libellulinae*, &c.; these often form the only clue to identification of nearly allied species. Furthermore, it will be necessary to avoid injuring the pulverulent exudation so common in adult individuals of many species.—R. McLACHLAN.]

*Coccinella distincta*, Fald., &c., at Woking.—Amongst a few *Coleoptera* captured here this spring, the following are perhaps noteworthy. *Coccinella distincta*, Fald., two specimens, in the pine-woods, running on the ground in company with *Formica rufa*. This is the first time I have seen it in the neighbourhood, though I have been on the look out for the insect for the past ten years. These examples may be wanderers from the old locality at Weybridge, where it was not rare in

1872. It was once taken at Horsell by Dr. Power. *Byrrhus pilula*, Linn., var., one specimen of a well-marked form, with a common, angulated median fascia on the elytra, and the prothorax (two spots on the disc near the base excepted), clothed with golden pubescence, and the rest of the vestiture of the upper surface dark. I have seen somewhat similar varieties of *B. fasciatus*, Fabr. (there are several named forms of this species—*auratofasciatus*, Duft., &c.), but not of *B. pilula*. *Homalota autumnalis*, Er., in a rotten pine-stump; *H. hepatica*, Er. by sweeping. *Oxytelus Fairmairei*, Pand., one specimen on the wing. *Ceuthorrhynchus melanostictus*, Marsh., a single specimen of a small dark variety, with the light pubescence of the elytra entirely whitish and broken up into spots. This insect was obtained by casual sweeping, a similar example having occurred here last year, both being very different in general facies from the typical form, which later in the season is common in the district on *Lycopus europæus*.—G. C. CHAMPION, Horsell, Woking: May 14th, 1903.

*Parnus nitidulus*, Heer, at Birkdale, Southport.—I have had for some time a dozen specimens of a species of *Parnus* in my collection which I had made out to be *Parnus nitidulus*, Heer. This identification has been confirmed by Mr. Tomlin, of Chester, and also by Mr. Champion—to whom he recently sent an example for examination—and he asks me to record it. The insects in question were captured by myself in July, 1890, on the sand-hills at Birkdale, Southport, Lancashire.—J. F. DUTTON, Corse Hill, Helsby, Warrington: April 20th, 1903.

## Obituary.

*The Rev. Thomas Ansell Marshall, M.A., F.E.S.*, was born at Keswick, 18th March, 1827, and died at Ajaccio, Corsica, 11th April, 1903. He was the son of Thomas Marshall, one of the Original Members of the Entomological Society of London, who published various notes, chiefly on the stridulation of insects, in the old Entomological Magazine, &c., and the father's tastes were inherited by the son in a pronounced manner. For some years his parents lived at Edgbaston near Birmingham, and at the age of 10 he was sent to Bridgnorth School, celebrated for turning out classical scholars. He gained a Trinity Scholarship and went to Oxford University; in his first year there (being 18 years old) he obtained a scholarship, and subsequently took his degree with classical honours. He also plunged deeply into Sanskrit and Hebrew, and was familiar with several European languages. He was at the British Museum for a short time, cataloguing books, but was induced to take Holy Orders. He became one of the masters at Cheltenham College, and afterwards one of the principals of Milford College. Subsequently he held various livings in England, and then went to Antigua in the West Indies as bishop's chaplain. There he had the misfortune to lose his wife (whom he had married in 1852) from fever, and himself narrowly escaped death from the same cause. This event intensified a naturally restless and roving disposition: he returned to England, and (with the companionship of a devoted sister who has furnished much of the foregoing information, and who was with him to the end of his life) became, about 1889, rector of Botus Fleming, a small parish in Cornwall, where he remained until 1897, when they went finally to Corsica, an island pre-



viously visited by him on more than one occasion, devoting his life entirely to Entomology, finally taking a house with garden and vineyard attached—an ideal home for a naturalist. Marshall had a thorough all-round knowledge of Entomology, with especial leanings towards parasitic *Hymenoptera*. Yet his first important work was “*Corynoderorum Recensio*” (Journ. Linn. Soc., 1865), a monograph of a family of *Coleoptera*, undertaken at the suggestion of the Rev. Hamlet Clark, who had recognised his ability. This was followed by “*Ichneumonidum Britannicorum Catalogus*,” published separately in 1870; “*A Catalogue of British Chrysididae, Ichneumonidae, Braconidae and Evanidae* (published by the Entomol. Soc. Lond. in 1872), and *Oxyura* (*ibid.*, in 1873); Notes on the first part of this general Catalogue (Entomol. Soc. Lond., 1872); Monograph of British *Braconidae* (*ibid.*, 1885—1889); and the *Braconidae* in André’s “*Species des Hyménoptères d’Europe*,” at which he was still working at the time of his death. In addition to these he published a very large number of shorter papers and notes, principally in the pages of this magazine. All his works are models of lucidity, his handwriting was type-like in its nature, and the marvellously careful illustrations were all from his own drawings, any defects these may prove to have must be put down to his inability to abandon the now much-abused system of carding his materials. Few entomologists have done more good work in their time than Marshall, and this might have been still more extended had it not been for his restlessness. A natural shyness and reserve, excepting in the company of intimate friends, was a pronounced personal trait; he seldom came to London, and the writer of this notice met him only two or three times; but he was an admirable correspondent, and his letters were samples of purity of style. To his great friend and fellow-worker, Mr. Bignell (now of Saltash), we are also indebted for items of information concerning him. He joined the Entomological Society of London in 1865, and for some years was a Fellow of the Linnean Society.—R. McL.

*Dr. Frederik V. A. Meinert*, the most prominent Danish Entomologist since Schiödte, whom he succeeded as Inspector of Zoology at the Copenhagen Museum, died on March 3rd, 1903, at the age of 70. He appears to have been originally a student in Theology, but his tastes led him in the direction of Zoology, and in this connection he travelled to Algeria and Tunis in 1868-69. He did much towards elucidating the Insects, *Myriopoda*, &c., of Denmark, and more especially their anatomy and physiology, and in these branches his name will always stand prominently forward, for his labours therein were both valuable and productive. In purely systematic work he did but little. When Wagner announced his discovery (received with incredulity at the time) that certain Dipterous larvæ have the power to produce larvæ or perfect insects (a form of parthenogenesis known now as pædogenesis) Meinert set to work and proved its correctness, and his investigations of the subject are often more generally quoted than are those of the original discoverer. We have heard singularly little of pædogenesis latterly. From 1887 to 1896 Meinert was the editor of the Danish journal “*Entomologiske Meddelelser*,” and in the No. for May, 1903, there is a short memoir of him (with detailed list of his works), by Dr. Klöcker, the present editor, which we have utilised in preparing this brief notice, and also a portrait, which depicts a man of marked personality.

## Reviews.

FAUNA HAWAIIENSIS, OR THE ZOOLOGY OF THE SANDWICH (HAWAIIAN) ISLES: being Results of the Explorations instituted by the Joint Committee appointed by the Royal Society of London and the British Association for the advancement of Science, and carried on with the assistance of those Bodies and of the Trustees of the Bervie Pauahi Bishop Museum of Honolulu: edited by DAVID SHARP, M.B., M.A., F.R.S. 4to. London: C. J. Clay and Sons. 1899-1903.

Eleven parts of this work (with many plates), which was commenced on March 20th, 1899, have now been published, and considerable progress has been made with the *Insecta*. The subjects dealt with so far are—*Coleoptera: Caraboidea* and *Phytophaga*, by Dr. Sharp; and *Rhynchophora, Proterhinidae, Heteromera*, and *Cioidae*, by Mr. R. C. L. Perkins. *Hymenoptera: Aculeata* by Mr. Perkins; *Formicidae* by Prof. A. Forel; and *Parasitica* by Mr. W. H. Ashmead. *Macro-Lepidoptera*, by Mr. E. Meyrick; *Orthoptera* and *Neuroptera* by Mr. Perkins; *Diptera* by Mr. P. H. Grimshaw; *Hemiptera* by Mr. G. W. Kirkaldy. The greater part of the material was collected by Mr. Perkins (much also by the Rev. T. Blackburn), who has resided for years in the Islands. We will content ourselves at present by quoting some of Dr. Sharp's general remarks on the *Caraboidea*, so as to give an idea of the essential peculiarities of this important item of the Hawaiian Insect-fauna. "The chief features of the *Carabidae* are (1) flightlessness; (2) a diminished chaetotaxy." "Amongst upwards of 200 precinetive species, no less than 90 per cent. are incapable of flight, possessing only vestigial wings—a parallel to them being found in St. Helena, where eleven out of the twelve *Bembidiids* discovered by Wollaston are wingless. Of the 212 species of *Caraboidea*, 210 belong to the *Carabidae*, and two only to the *Dytiscidae*." The *Anobiidae*, not yet published, appear to be exceedingly numerous, both in individuals and species, while the *Staphylinidae* are represented by minute uninteresting forms. The *Micro-Lepidoptera* have been undertaken by Lord Walsingham.

A LIST OF THE LEPIDOPTERA FOUND IN THE COUNTIES OF CHESHIRE FLINTSHIRE, DENBIGHSHIRE, CARNARVONSHIRE AND ANGLESEA: compiled and edited by GEORGE O. DAY, F.E.S., with the assistance of J. Clarke, Herbert Dobie, M.D., and Robert Newstead, A.L.S., F.E.S., &c. From the Proceedings of the Chester Society of Nat. Sci., Lit. and Art. 8vo, pp. 112. Chester: Grosvenor Museum. 1903.

Still another local List of British *Lepidoptera* and a very excellent one, embracing one English and four Welsh counties, or an area of 2878 square miles, with an average length and breadth of 120 and 24 miles respectively, the highest points being over 3000 feet. It is avowedly based upon the Cheshire List published by Mr. A. O. Walker, F.L.S., in 1885, and Dr. Ellis's Lancashire and Cheshire List has also been called into requisition; the names of a long list of willing helpers are likewise given. The classification and nomenclature are those of the new "Staudinger" (1901). It ends somewhat abruptly at *Tortrix paleana (icterana)*, about 670 species listed to that point; perhaps it might have been better to have to deferred publishing the fragment of *Tortricidae* until sufficient materials were accumulated for continuing the *Micro-Lepidoptera*. This corner of the United Kingdom is well-known to produce several species peculiar to it. The list reflects the greatest credit upon Mr. Day and his colleagues, and must be studied by all

interested in British *Lepidoptera*. The local information for Cheshire is very full; for the other counties more or less meagre: but one need not look far for an explanation of this.

## Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: April 20th, 1903.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. A. H. Martineau exhibited *Xylocopa flavo-rufa*, De Geer, and a species of the Coleopterous genus *Anthia*, taken by a friend near Bloemfontein. Mr. G. W. Wynn, a small series of *Lithosia caniola*, Hb., taken at sugar near Torcross, South Devon, and also two *Agrotis obeliscæ*, Hb., from the same place, taken in August last year; likewise *Euchloris* (*Phorodonta*) *pustulata*, Hufn. (*hajularia*, Schiff.), from Knowle, July 16th, 1902, and *Melitæa aurinia*, Rott., taken by himself at Sutton Park in 1884, and probably the last specimen of the species taken so near Birmingham. Mr. Fountain said that the last named species had been taken much more recently at Knowle, which, however, is not quite so near to Birmingham as Sutton, and on the other side. Mr. Fountain, a series of *Biston strataria*, Hufn. (*prodromaria*, Schiff.), reared from a pair taken in cop. at Chelmsley Wood last year; he found that the best way to rear them without cripples was to cover them with moss and keep it wringing wet; on former occasions when rearing the species he had always bred a large proportion of cripples. Mr. Bethune-Baker expressed surprise at this, as he reared a large brood some years ago, and had no trouble with cripples at all; but Messrs. Wynn and Wainwright said that their experience was like that of Mr. Fountain, and that even in a state of nature, in the woods round Birmingham, they had found a large number of cripples, probably more than half. Mr. Fountain showed *Taniocampa gracilis*, F., bred from Earlswood larvæ. Mr. G. T. Bethune-Baker, a box full of African *Lycenidæ*, conspicuous by the absence of the characteristic blue colours; they were all from Sierra Leone, and included *Liptena acreea*, resembling an *Acreea*, and various species of *Pentila*, *Pseuderesia*, *Citrinophila*, &c.—COLBRAN J. WAINWRIGHT, Hon. Secretary.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY:—The Third Ordinary Meeting of the current session was held in the Royal Institution, Liverpool, on Monday, April 20th, Mr. Richard Wilding in the Chair. The minutes having been confirmed, the Secretary announced the following donations to the Library:—"The Flora of the Liverpool District" (with 800 drawings of the plants, by Miss E. M. Wood, and 21 photographs of the neighbourhood, by Dr. J. W. Ellis, F.E.S.), edited by Dr. C. Theodore Green, F.L.S., presented by Dr. Ellis; and "Notes on the 'Large Copper'" (*Chrysophanus dispar*) by J. R. Charnley, F.Z.S., F.E.S., from the Author.

Mr. William Webster, M.R.S.A.I., Vice-President, communicated a valuable paper on "Entomological Antiquities and Folklore of Insects," in which he dealt in an interesting and exhaustive manner with a large number of the quaint sayings and superstitions that have, from time immemorial, been associated with many of our better known hexapods. The period covered extended from the earliest times to the present day, and was conveniently considered under headings of the various

Orders of Insects as at present constituted. A hearty vote of thanks having been accorded the lecturer, the following exhibits were shown:—A specimen of the exceedingly rare Lepidopteron, *Leucania favicolor*; *L. pallens* and *L. straminea* by Mr. F. N. Pierce; *Hydrophilus piceus* from Wicken Fen, October, 1902, by Mr. F. Birch; *Attacus Cynthia*, *A. Atlas*, *A. Promethea*, &c., reared from foreign pupæ by Mr. J. J. Richardson; *Periplaneta americana* from Manchester, February, 1903 by the Secretary on behalf of Mr. Ben Jones; British *Coleoptera*, including *Harpalus neglectus*, *Bembidium Clarki*, *Ammocius brevis*, etc., from Birkdale, *Aphodius sordidus* (Blackpool) and *Bembidium argenteolum* (Lough Neagh) by Mr. R. Wilding; and a collection of British *Dermoptera* by Mr. E. J. B. Sopp.—E. J. BURGESS SOPP, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, April 1st, 1903*. Professor E. B. POULTON, M.A., D.Sc., F.R.S., President, in the Chair.

Mr. M. Jacoby exhibited specimens of *Rhagiosoma madagascariensis*, Heyd., from Madagascar, and *Carpophagus Banksiæ*, MacLeay, and *Mecynodera coxalgica*, Boisd., from Australia. In appearance they presented many characteristics not usually associated with Phytophagous *Coleoptera*. Mr. C. P. Pickett, forced specimens of *Dilina tilia* bred from Essex pupæ. In two ♀♀ the usual rust-coloured markings on the fore-wings were abnormally pale, and the hind-wings were black. In another ♀ the rust-red hue pervaded the whole wing area, the four normal green blotches being a deep reddish-brown, corresponding with a form of *Smerinthus populi* frequently bred. A third ♀ displayed light brown hind-wings; while one ♀ was of the normal ♀ coloration. Mr. W. J. Lucas, lantern slides of the specimen of *Hemianax ephippiger*, and of the *Orthetrum* (?) species attacked by an *Asilid* fly, shown by Mr. R. McLachlan at the last meeting. [*vide* Plate iii.—Eds.]

The following papers were read:—Dr. T. A. Chapman, "Contributions to the Life History of *Orina (Chrysocloa) tristis*, var. *smaragdina*." Sir George Hampson, on "*Apoprogon hesperioides*, a remarkable new Lepidopterous insect from Zululand." He said that the genus must be referred to the family *Euschemonidæ*, which was represented by the single species *Euschemon Rafflesiæ*, Westw., from Australia. In what quarter of the globe the family originated it was impossible to say, but the appearance of the species in question suggested that it was a survival of the scattered remnant of the Antarctic fauna. It was, however, most remarkable that the genus should occur in Africa and Australia alone. Mr. F. Enoch, a paper, illustrated with lantern slides, on "The Life History of *Cicindela campestris*." A discussion followed as to how far the abundance of food in the larval state affects the development of insects, in which Mr. W. E. Sharp, the President, and other Fellows took part. Mr. Enoch said that where the food supply happened to be insufficient, Neuropterous nymphs would continue two years in that stage, and Mr. C. O. Waterhouse mentioned a case reported to him of the larvæ of *Taenias urticae* which, having exhausted their summer pabulum, retired to hibernate until the following year. Mr. A. J. Chitty said he had observed that Coleopterous larvæ under similar circumstances would consume flies; while Mr. H. St. J. Donisthorpe said that he had bred successfully a species of the same order by feeding them on paper.—H. ROWLAND-BROWN, *Hon. Sec.*



ON THE BRITISH SPECIES OF *TRYPHONIDÆ-MACROCHILI*, WITH  
ESPECIAL REFERENCE TO *EXETASTES CINCTIPES*, RETZ

BY CLAUDE MORLEY, F.E.S., &c.

British students of the Ichneumonidæ have been in the habit of regarding the genera *Banchus*, *Exetastes* and *Leptobatus*, Grav., as constituting an aberrant group of the OPHIONINÆ; but Thomson (Op. Ent., xxii, 2408), has treated them as belonging, with more correctness, to the TRYPHONINÆ, and has termed them "*Tryphonidæ macrochili*," on the ground of the strongly reflexed clypeus; this position is strengthened by the fact that at least two species of *Exetastes* have been bred from *Tenthredinidæ*, upon which true TRYPHONINÆ usually prey. The very large and rhomboidal areolet certainly resembles that of *Mesochorus*, but the subexserted terebra, hardly petiolated abdomen and general conformation allies these insects, while rendering them sufficiently distinct from either, with the latter subfamily. In Britain only the first two of these genera are represented; they may easily be distinguished:—

Eyes internally emarginate; third segment laterally immarginate;  
epicnemium wanting; onyches pectinate..... *BANCHUS*, Fab.  
Eyes not emarginate; third segment laterally margined; epicnemium  
distinct; onyches simple . . . . . *EXETASTES*, Grav.

*BANCHUS*, Fab.

- (2). 1. Coxæ strongly and sparsely punctate beneath ..... *variegator*, Fab.  
(1). 2. Coxæ finely and closely punctate beneath.  
(4). 3. Scutellum mutic ..... *falcator*, Fab.  
(3). 4. Scutellum apically spinate.  
(6). 5. Scutellar spine short, stout and porrect; maxillary palpi apically cylindrical ..... *pictus*, Fab.  
(5). 6. Scutellar spine elongate, slender and deflexed; maxillary palpi apically clavate ..... *moniliatus*, Grav.

*B. VARIEGATOR*.—This species, described in 1775 (usually referred to by continental authors under its later name, *B. compressor*, Fab., E. S., 1792—94), has figured in all our catalogues. In coloration it closely resembles *B. pictus*, and I do not find that the "intercubital recurrent nervures" (sides of the areolet) are shorter in this than in that, as described by Bignell (Trans. Devon. Assoc., 1898, p. 495).

*B. FALCATOR*.—The coloration and scutellar structure are distinct; it was first noticed in Britain by Curtis under the name *B. Farreni* (B. E., pl. dlxxxviii), and was subsequently sent by Hope to Gravenhorst from Netley. Capron records it from Shiere (Entom., 1880, p. 88), and there are several examples—of which the ♀♀ are labelled "*moniliatus*"—in his collection; Piffard has taken it at Felden



n Herts; Wainwright at West Runton in Norfolk; Bingham at Ravenscar; and Sparke in Tuddenham Fen. It would appear to be especially common on the coast, and occurs abundantly on *Heracleum* flowers at Southwold in July.

*B. PICTUS*.—First introduced by Donovan (B. L., xii, pl. 413). It has been recorded from Colwich, by Bradley; there is an example *ex Pygæra bucephala* in the York Museum, and others have been bred from *Selenia illunaria* (Entom., 1881, p. 141). It is a common species in May; the males fly low over herbage in woods, and have much the appearance of *Crabrones*.

*B. MONILIATUS*.—Introduced by Curtis under the name *B. hastator* (B. E., 588). It is probably uncommon in Britain, and I have only seen one male, bred by Mr. J. C. Haggart in the middle of July from an unknown host at Galashiels: this example emerged in transit, and had gnawed some of the surrounding wadding into its cocoon (which is black and elongate, but much less cylindrical than that of *Eretastes cinctipes*), but had not evacuated it, though it did so immediately upon being disentangled. Thomson, in spite of what Holmgren says, indicates the ♂ palpi as alone possessing clavate apices, the peculiar structure of which caused Wesmæl to erect the genus *Corynephanus* for its reception. It has been bred from *Anarta myrtilli* (Marshall, Ent. Ann., 1874), and from *Trachea piniperda*.

#### EXETASTES, Grav.

- (2). 1. Metatarsus clear red ..... *cinctipes*, Retz.
- (1). 2. Metatarsus infusate or black.
- (8). 3. Scutellum apically or entirely white.
- (7). 4. Face not flavous.
- (6). 5. Callosity beneath radix not pale..... *guttatorius*, Grav.
- (5). 6. Callosity beneath radix pale ..... *gracilicornis*, Grav.
- (4). 7. Face flavous ..... *facialis*, Desv.
- (3). 8. Scutellum black.
- (14). 9. Anterior femora mainly black.
- (11). 10. Hind femora sanguineous-red ..... *femorator*, Desv.
- (10). 11. Hind femora black.
- (13). 12. Abdomen centrally red ..... *nigripes*, Grav.
- (12). 13. Abdomen entirely black ..... *maurus*, Desv.
- (9). 14. Anterior femora red, sometimes basally infusate.
- (20). 15. Abdomen black.
- (19). 16. Hind coxæ black.
- (18). 17. Hind tibiæ apically infusate ..... *fornicator*, Fab.
- (17). 18. Hind tibiæ entirely infusate ..... *athiops*, Grav.
- (16). 19. Hind coxæ red..... *calobatus*, Grav.
- (15). 20. Abdomen mainly red.
- (22). 21. Second and third hind tarsal joints fuscous ..... *lævigator*, Vill.
- (21). 22. Second and third hind tarsal joints white ..... *illusor*, Grav.

N.B.—The structural conformation of these insects is so analogous as to be practically useless in tabulation, and, although some are distinctly stout and others slender, some have elongate and others comparatively short antennæ, &c., &c., it is thought better to, at present, fall back upon the primitive distinction of coloration than attempt mere comparative sections upon these features. *Eretastes albitarsus*,

Grav., has been said by Bridgman (*cf.* Trans. Norf. Nat. Soc., v, p. 624), to be nothing but *Meniscus murinus*, Grav., which certainly does not belong to the present genus.

*E. CINCTIPES*.—The synonymy of this species, hitherto known as *E. osculatorius* in Britain, should stand:—*Ichneumon atrator*, Forst., Nov. Spp. Ins., 84, ♀; *cf.* Gr., I. E., iii, 903 (?). Geer, Mém., ii, 849, pl. xxix, ff. 11 et (cocoon) 10, ♂ ♀; *I. cinctipes*, Retz., Ins., 168, ♀; *Eretastes cinctipes*, Thoms., O. E., xxiii, 2414. *Ichneumon osculatorius* Fab., M. I., i, 261; *Eretastes osculatorius*, Gr., I. E., iii, 413, ♂. *Ichneumon clarator*, Fab., E. S., ii, 151; *Ophion clarator*, Fab., Piez., 134; *Eretastes clarator*, Gr., I. E., iii, 405, ♀. *Ophion tarsator*, Fab., Piez., 134, ♀; *Tryphon tarsator*, Zett., I. L., 386; *Eretastes tarsator*, Holmgr., Sv. Ak. Handl., 1858, No. 8, p. 150, ♂ ♀.

*E. GUTTATORIUS*, ♂ ♀.—A common British species, first noticed in 1856; occurs on flowers in July and August; parasitic upon *Caradina alsines*, &c. Cheddar, Alderney, Hastings, Dover, Felden, Ipswich, Bury St. Edmunds, Stowmarket, New Forest. The ♂ is well figured by Van Vollenhoven.

*E. GRACILICORNIS*, ♀.—This female, introduced upon Desvignes' authority in 1856, must be regarded with some doubt as British; it has been found in Russia but not in Sweden. It is a stout species, with the callosities beneath the radix, but not the pronotum (as is usually the case in *E. guttatorius*), white; the apices, and not the whole, of the hind tibiæ are black.

*E. FACIALIS*, ♂.—I know nothing of this species beyond the description by Desvignes, which leaves much to be desired. Mr. Hamm, of the Oxford Museum, has recently sent me three examples of a ♂ *Eretastes* for determination which may possibly belong to this species, though differing somewhat widely in the absence of any central facial line, in their piceous stigma and stramineous tegulæ, in their red abdomen, which has only the basal segment black, and in the colour of the hind-legs, of which the femora are red with a black basal mark, the basal two-thirds of the first tarsal joint and the tibiæ (except at extreme base) black, and the remainder of the tarsi (except the onyches), white. One specimen has the scutellum nearly entirely, the second binated with, white; in the third it is black.

*E. FEMORATOR*, ♀.—I know nothing of this species beyond the descriptions by Desvignes, Holmgren, Thomson, and the figure by Van Vollenhoven. Both sexes were originally indicated, but the female alone appears to have been recognised upon the Continent; Brischke records it from Neustadt.

*E. NIGRIPES*, ♂ ♀.—This species was introduced as British in Marshall's 1870 Catalogus; it has been bred from *Hadena oleracea* (*cf.* Entom., 1884, p. 68), from *Arctia lubricipeda* and from *Noctua abrotani* (Ratzeburg).

*E. MAURUS*, ♀.—Comparing Desvignes' description of this with that of the last species, the only distinction which is apparent is the abdominal coloration. True, the former says "first pair of tibiæ and the apical half of femora fuscous," but he continues "second pair darker, also apex of the femora"; from which it would appear that the word *apical* should read *basal*. Desvignes' descriptions are loose and often misleading.

*E. FORNICATOR*, ♂ ♀.—Introduced as British by Desvignes in 1856; I have

recently examined both sexes, captured by Mr. E. C. H. Davies at St. Ervan in Cornwall. It is a stout species with somewhat clouded wings and elongate, unicolorous antennæ. *Cucullia balsamitæ* is indicated as its host by Brischke, and Van Vollenhoven, who figures it well (Pinac.), tells us it is a common parasite of *Hadena oleracea*, though hardly, I expect, in Britain.

*E. ÆTHIOPS*, ♂ ♀.—Introduced in 1870; this is probably one of those earlier species of the Gravenhorstian genus, whose right to inclusion therein was doubted by Thomson since he makes no mention of it. The head (excepting the white clypeus, etc., of the ♂), antennæ, thorax, abdomen, and hind tarsi, are immaculate.

*E. CALOBATUS*.—The ♀ was described from British and Piedmontese specimens in 1829; Bridgman first described the ♂ (Entom., 1878, p. 36).

*E. LÆVIGATOR*, ♂ ♀.—Introduced in 1856; the body is stouter and the unicolorous antennæ, especially of the ♀, shorter than in the next species. It is probably common, and both sexes have been taken by Mr. Piffard at Felden.

*E. ILLUSOR*, ♂ ♀.—Also introduced in 1856; the ♀, excepting its red body, very strongly resembles that of *E. cinctipes*, but the head and thorax are more shining and strongly punctate, the former is broader, the antennæ thinner, wings smaller with venation darker, metathorax apically more prominent at the sides with the metapleural costæ more distinct. I bred it in June, 1900, and 1902, along with *E. cinctipes*, probably also from *Mamestra brassicæ*, from Burnley; and possess examples from Retford, Ashby, Bristol, Ipswich, and the New Forest. It has also been bred from *Hadena costigra* (Brischke), *Mamestra persicariæ* (Entom., 1881, p. 141), and perhaps also *Arctia caja* (l.c. 1883, p. 67).

#### ON EXETASTES CINCTIPES, Retz.

“It is difficult to account for the absence of the surface-eater-pillars from our field crops for many years together, unless, as is generally the case, they are occasionally overpowered by parasitic insects,” says Curtis (Farm Insects, p. 130); and in this respect it may be useful to instance a few points with regard to the economy of *Exetastes cinctipes*, which have not, to the best of my knowledge, been previously observed, more especially as little doubt remains that to this species we owe to a larger extent than has yet been appreciated the preservation of our garden vegetables. In October and November, 1899, Mr. J. Wigin sent me some 550 cocoons of this species from Methley near Leeds, which he found in his garden while digging potatoes, and which, he says, “will be mostly from *Mamestra brassicæ* and *Hadena oleracea*.” At the end of October, 1900, he was good enough to send another hundred; and in October, 1901, two more large consignments. These I shall term *a*, *b* and *c*. On October, 10th 1899, one ♀ *Exetastes* made what was doubtless a very late and probably accidental emergence, and four days later appeared the only *Mesochorus thoracicus*, Grav. (♀), which I have bred; the

latter was doubtless hyperparasitic, through *Exetastes*, upon one of the above hosts, as also is *M. (Astiphromus) mandibularis*, Thoms., which is the species referred to in every subsequent instance. These are the only two autumnal emergences, all the rest appearing to be restricted to the months of June and July, thus:—

1900:—June 18														July																				
	19	20	21	22	23	24	25	26	27	28	29	30 to 2	3	4	5	6-7	8	9	11	12-15	18													
a	Exetastes ♂ ♂	37	7	11	13	10	9	15	12	8	11	11	16	5	1	2	...	...	...	...	4	1												
	Exetastes ♀ ♀	4	2	2	5	5	10	6	9	11	13	13	11	49	5	14	2	5	3	...	...	2	...											
	Mesochorus ♂ ♂	1	1	1	...	...	...	1	2	1	1	1	...	3	1	3	3	3	3	1	2	4	...											
	Mesochorus ♀ ♀	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	1	1												
Max. local. temp.		71°	72°	70°	64°	...	68°	67°	61°	62°	69°	67°	...	65-72°	69°	67°	72°	61°	62°	72°	77°	76°	...											
1901:—																																		
b	Exetastes ♂ ♂	1											10					2	3	2; 40 emerged later.														
	Exetastes ♀ ♀	...											6					1	5	...; 3 emerged later.														
	Mesochorus ♂ ♀	...											9					...	6	3	20 emerged later.													
1902:—																																		
		5																					16-22											
c	Exetastes ♂ ♂	4												...								5	...				...	...	...					
	Exetastes ♀ ♀	12												...								7				...				2	2	2		
	Mesochorus ♂ ♀	8												1								1				...				3	1	...	7	2

Of a, 8 ♀ ♀ and 9 ♂ ♂ *Exetastes*, but no *Mesochorus*,—of c, 15 *Exetastes* ♂ ♂ ♀ ♀ and 1 ♀ *Mesochorus*—failed to emerge, though perfect.

Concerning the mortality, I may say that in the first consignment there were, mingled with the cocoons, 40 detached and 13 attached Noctuid larva skins; one cocoon contained Chalcids; 23 *Exetastes* larvæ had died of mould and 4 from obscure causes. That received in November, 1899, produced none the same year; one half-developed imago *Exetastes* had died of obscure causes; one nearly fully-developed imago and 6 larvæ had died of mould, in one of which latter the hyperparasitic *Mesochorus* larva was very obvious; 2 larvæ died of obscure causes; and 31 cocoons contained Chalcids, of which the first emerged on June 19th, while in one the Chalcid larvæ were found to have died, though to be still soft, in October, 1900 (these adipose larvæ doubtless take a long time to dessicate when enclosed in a cocoon). Concerning b, 3 larvæ died of mould and 7, as well as one pupa, from obscure causes; and in one cocoon Chalcids were parasitic, certainly upon *Mesochorus*,\* the cocoon still containing 18 living yellow Chalcid larvæ and pupæ and the dead *Mesochorus* pupa in April, 1902. Concerning c, two half-developed imagines and 4 larvæ had died of obscure causes (in one instance probably through the impression of the cocoon, though this does not always lead to fatality, nor even retard perfect development and

\* Here we have Chalcids preying upon *Mesochorus*, which preys upon *Exetastes*, which preys upon Noctuids!

emergence) ; 3 larvæ died of mould, and no cocoon contained Chalcids. Of thirty-two examples observed, 11 emerged between 10 a.m.—1 p.m., 13 between 1 p.m.—10 p.m., and 8 between 10 p.m.—10 a.m. ; I am, however, of opinion that the majority emerge during the night.

Ichneumons effect their escape from their own or their hosts' cocoon by biting a circular incision around one end, much as a caterpillar consumes a leaf, saturating it the while with oral fluid—perhaps potassium hydroxide—and, when a sufficient distance is traversed, the operculum is forced outwards (one example emerged through both its own cocoon and a piece of paper gummed over it) ; this is the only usage to which their mandibles appear to be applied, since they subsequently feed only upon juices. In emerging, both *Exetastes* and *Mesochorus* rush straight out of the former's cocoon at a great pace, with wings already quite fully developed and usually capable of instant flight, though often damp and sometimes dabbled with pupal liquid. Unlike the *Lepidoptera*, these insects do not quit the cocoon as soon as the pupal state is terminated, but several days are subsequently spent within the former, during which the ultimate state of perfection is attained. I have only once seen *Exetastes in coitû* ; Ichneumonidæ in general are very rarely surprised in this condition : Gravenhorst, who captured 100,000 specimens during thirty years, met with not one instance of it. In the present case, the pair remained quite quiescent for half an hour ; the ♂ held the ♀ with its anterior legs, the hind pair being retracted and in no way in use ; the ♂ antennæ were porrected, but those of the ♀ were laid back along the sides of the thorax.

I have a goodly number of the emerged *Exetastes*, and shall be glad to give them to any one interested in the subject ; among them the variation is surprisingly small. In *both sexes* the 2nd, 3rd and 4th hind tarsal joints are normally white, rarely flavous after death, and occasionally with the base of the 5th also flavous ; the extent of sessility of the areolet varies somewhat and it is sometimes subpetiolate ; the nervelet is also of variable length, often obsolete. The *male* has the scutellum usually flavous at its apex, sometimes the apical half or the whole scutellum except its base is flavous, at others it is subobsoletely binotated with flavous at its extreme apex or entirely black ; the antennæ, which normally bear no pale band, occasionally exhibit more or less distinct traces of one and very rarely the band is quite evident ; the mesothorax is laterally flavous in typical examples, but sometimes more or less castaneous, reduced to mere dots or rarely



entirely wanting; the mesopleuræ, generally flavous in part, are sometimes immaculate; the pronotum is occasionally flavous or bimaculate; the tegulæ may be flavous or castaneous; the abdomen is never quite black, though the extent of the rufous colouring is very variable; the femora are very rarely infusate, almost always paler at the extreme base, which is rarely quite white. The *female* varies very slightly in having the usually entirely black abdomen rufescent at the thyridii and apical margin of the 2nd segment; and its intermediate femora are almost always nigrescent towards the base.

The larva of *Exetastes cincipes* is of the usual Ichneumonid type and has not, I think, been yet described. It is ovate, deplanate, curved, primrose-yellow; it consists of 14 segments, of which the cephalic alone bears distinctive markings; the lateral lobes are discreted by a more or less distinctly impressed line above and beneath, and bear concolorous spiracles; I detect no palpi nor prolegs. The cephalic segment is coriaceous; the antennæ are represented by two smooth and hardly darker tubercles, behind each of which, at the inner orbit of the eye, is a semilunar area of the same colour and glabrosity. The eyes in the fully fed larva are represented by two subventaneous purple patches at the upper lateral base of the cephalic segment. Two oblique and linear impressions run down from near the antennæ to the apex of the clypeus, which is piceous and extends laterally to the bases of the mandibles; the labrum, except at its circular apex (between the apices of the mandibles), is not infusate. The mandibles are very distinct, broad and subquadrate, margined with piceous; at the upper apex of each is an acuminate slender, nigrescent tooth; their bases are dark and corneous, extending some distance backwards. The labium is subtriangular, situated in a subrectangular impression below the centre of the mandibles. Length, 12 mm.

These larvæ usually emerge as imagines the following year; but two, received in October, 1901, are still healthy larvæ in May, 1903.

The cocoon was described by De Geer\* as oval, black and shining, but Van Vollenhoven, instancing that of no particular species, more correctly describes it as cylindrical, very long, rounded at both ends, dark coloured (sometimes black), always dull, consisting of 3 or 4 layers of silk, gradually diminishing towards the interior in consistence and in intensity of colour. To be precise, that of *E. cincipes* is about 16 mm. in length and  $4\frac{1}{2}$  in breadth, cylindrical, with the apices of equal size and broadly rounded; the outer cover is very stout, black, externally somewhat dull and smooth with but faint traces of "silk," internally glabrous and very shining; within this and connected with it in no way is a second cocoon, testaceous-brown with a slightly paler central band, of much thinner and more flimsy consistency, resembling gold beater's skin; and within this, again, is a third, also detached and only slightly paler and thinner than the second cocoon; over the *outer* side of this last is a fourth entirely free one, which, however, covers but one half of it (presumably the anal half, in which the pupal liquid is contained). I have seen

\* De Geer's imaginal description of the two sexes is particularly lucid, but his fig. 11 is poor, representing the petiole as distinct, and the abdominal segmentation is much too pronounced, resembling that of *Mesostenus obnoxius*, Grav.

examples in which the second covering was constructed in two distinct sections, overlapping but unconnected around the centre. Within the innermost cocoon the larva spins no means of attachment, but, on the contrary, has certain powers of muscular locomotion. The imago effects its escape through a subcircular hole a little on one side of the apex; if, however, through lack of oral fluid, &c., it is unable to emerge, it turns round in the cocoon, protrudes its white tarsi from the incomplete orifice, and invariably dies in this position.

Besides *Mamestra brassicæ* and *Hadena oleracea*, it has been bred from *Retinia pinicolana* (Trans. S. Lond. Soc., 1890), and *Miana furuncula* (Entom., 1881, p. 141). It is very widely distributed, having been recorded from Land's End, York, Earlham near Norwich, Essex; and I have seen examples from Barnstaple, Lidford, Nottingham, Carlisle, Aberlady, Birmingham, Plumstead, St. Ervan in Cornwall, Worksop, Runtun, Derbyshire, Woodbridge, Bristol, as well as from Guernsey and Alderney. It is very common in gardens at Galashiels and Ipswich, feeding freely upon *Heracleum* and *Angelica* flowers. It is undoubtedly the "*E. albiditarsis*" of Dallas (Elements of Entom., p. 236), said to be abundant. On the Continent I find it recorded from Bavaria, Russia, Brunswick, Austria, as somewhat rare in Sweden extending to Lapland, from several localities in Prussia; and I have seen an example captured by the Rev. T. A. Marshall at Nantua in Ain.

Ipswich: April, 1903.

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ACROBASIS VERRUCELLA, HB., AND RUBROTIBIELLA, F. R.,  
AS BRITISH INSECTS.

BY C. G. BARRETT, F.E.S.

In the course of study of our British species of *Phycitidæ* I am forced to the conclusion that we possess a species which has long been overlooked, though described and named a century ago by Hübner. The non-recognition of this species may perhaps have something to do with the state of confusion in this group complained of eighteen years ago by the late M. E. L. Ragonot, in this Magazine (Ent. Mo. Mag., vol. xxii, p. 27).

In or about the year 1858 our colleague, Mr. R. McLachlan, discovered at Forest Hill, near London, then far less under the incubus of the builder than is now the case, and situated on the border of Surrey and Kent, a pretty species of *Acrobasis*, about which there has from time to time been some discussion, and which was placed, though I think erroneously, under the name *rubrotibiella*, F. R.

To him I am indebted for the opportunity of examining some of the original specimens in fine condition, and I find in them the actual character given by Hübner and quoted by M. Ragonot as distinguishing *verrucella*, Hüb., a reddish wart-like elevation at the first line of the fore-wings. This elevation of red scales, sometimes duplicated, is not placed *upon* the thick black "first line," but just outside and *touching* it. No such raised tuft of red scales appears upon our well known *A. tumidella*, Zk., nor upon the very much less known *A. rubrotibiella*, F. R., and, combined with the different shape of the fore-wings, ample reason seems to be furnished for acknowledging it as a distinct species. At the same time, as it seems to me, the alteration of the name of our well known *A. tumidella* to *Zelleri* is unnecessary.

A detailed description may be desirable.

*A. verrucella*, Hüb. Expanse, 20 mm. Fore-wings rather narrow, purple-grey, basal space whitish-buff with a basal red dot; close outside the first black line are one, or sometimes two, small tufts of upraised red scales. Hind-wings smoky golden-brown.

Antennæ of the male thread-like, but having a small pointed tuft on the basal joint, and the second joint curved and thickened, red-brown; palpi ascending, slender, outwardly red-brown, paler within; head reddish-white; collar purple-red, with a dull white edging; thorax and abdomen purple-brown, the latter glistening, and having a paler edging to each segment. Fore-wings elongate, narrow but broadened behind; costa nearly straight; apex bluntly angulated; hind margin gently rounded and rather full; pale purple-grey, dusted with brown and black; at the extreme base is a rich red dot above the median nervure; remainder of the basal space very pale buff, shading into white close to the first line; this line is thick, black, nearly straight and erect; touching it is a faint rufous cloud in which are one or two upraised tufts of red scales; the black scales of the first line itself are also rough and up-tilted; in the middle of the wing is a large purplish-brown cloud, followed by two black ill-defined discal dots; second line oblique and obscure, bent inward at a short distance from both costal and dorsal margins, but the intermediate portion bowed outwards, and, upon this curve, thrice toothed; these teeth most distinct upon an interior edging of cloudy black; hind margin smoky purplish-grey, with a faint row of black dots, closely followed by a black marginal line; cilia concolorous, glossy. Hind-wings moderately ample, shining smoky-brown, the cilia rather whiter and brilliantly glossy. Female similar, except that the antennæ are quite simple.

On the wing in July and the beginning of August.

It frequents old oak trees, flying *about* them at dusk, and has been taken at sugar upon their trunks.

At present its range appears to be uncertain; but many specimens were taken in the old locality, at first by Mr. McLachlan, and

since by the late Mr. Howard Vaughan and others. Doubtless some of these are scattered through many collections under the name of *rubrotibiella*.

The genuine *A. rubrotibiella*, F. R., has the fore-wings decidedly broader from the base and much more squared behind; the hind margin being almost perpendicular and the anal angle conspicuously filled out. Colour shining pale red-buff; first line very straight, black, inwardly edged with white, having rough raised black scales along the black line, but none outside it; the discal dots black but extremely small, and the second line very faint and obscure. The shape of the fore-wings is its most striking character, and is well shown by German examples. I have but one British specimen. It was taken many years ago near Portsmouth by Mr. Moncreaff. I know of no other British examples, but this one is unmistakable.

The character of the *red tibiæ* seems to be common to the group.

*A. tumidella* is a well known species, as common as *A. consociella* in southern woods. Its fore-wings are broad and ample, more so than in either of the other species, not expanded behind as in *A. rubrotibiella*, but broadly clouded with rich orange-red and crimson on a purplish-grey ground.

Tremont, Peckham Rye, S.E. :

June, 1903.

#### DESCRIPTION OF A NEW SPECIES OF *BATRACHEDRA* ASSOCIATED WITH SPIDERS IN SOUTH AFRICA.

BY THE RIGHT HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S., &c.

#### 359. *BATRACHEDRA*, Stn. [*Lep.*]

3562 : 1.—*BATRACHEDRA* *STEGODYPHOBIUS*, *sp. n.*

*Antennæ* pale ochreous, with narrow blackish bars above to beyond their middle, three broad equidistant blackish bands around their outer half. *Palpi* pale ochreous, with black spots above before the outer ends of the median and terminal joints. *Head* and face blackish, with some ochreous scales above the eyes. *Thorax* blackish, touched with ochreous posteriorly and on the tegulæ. *Fore-wings* pale brownish ochreous, the costa dusted with black in a narrow line along the basal half which becomes diffused and widened about the middle of the wing, but is interrupted before the apex where the black dusting recurs profusely, extending over the cilia and produced backward in a streak to the end of the cell; dorsal cilia blackish; underside blackish with a pale spot in the cilia before the apex. *Exp. al.* 7—8 mm. *Hind-wings* and cilia smutty grey. *Abdomen* blackish grey above, ochreous beneath. *Legs* alternately banded with black and ochreous.

*Type*, ♂ (9170); ♀ (9168). Mus. Wlsm.

*Larva*: white, the contents of the crop and intestines showing through, without markings, their position being indicated by whitish bristles. Head honey-yellow; prothoracic plates with the posterior outer angle rounded off, the others rectangular, suture very narrow, dark olive-grey becoming blackish along the

margins; prothoracic legs with a black chitinous spot above and an elongate elliptical black chitinous spot between them beneath; anal plate olive-grey, the anterior edge blackish. Legs 16 (thoracic  $\frac{3}{4}$ ; abdominal  $\frac{1}{2}$ ; anal  $\frac{1}{4}$ ). Long. 6 mm., in repose, stumpy; extending to 9 mm. when in motion, then very thin and elongate.

*Type*, Larva (9166). Mus. Wslm.

*Hab.*: ORANGE RIVER COLONY—Vredefort Road, *Larva* living commensally in the nest of a social spider (*Stegodyphus* sp.) and feeding on insect remains. VII—7.VIII, excl. (in England) 26.VII—7.X, 1902.

Five specimens bred by Mr. R. I. Pocock, and three at Merton from nests collected by Captain Barrett-Hamilton.

This species, for which I am indebted to Mr. Pocock, is very nearly allied to *Batrachedra ledereriella*, Z., from which it differs in its dark head, but paler and less suffused wing-surface, the disc and dorsum not being overspread with black dusting as in that species; it also differs in its much darker cilia and abdomen and in the form of the annulations on the outer half of the antennæ.

I have bred *ledereriella* from a great variety of plants although it appears always to be associated with the presence of spiders' webs and accumulations of rubbish likely to contain them—empty seed-pods, the nests of gregarious larvæ, deserted webs of larvæ on many plants, even from seeds of *Cistus* and from galls formed by the larvæ of *Coleophora stefanii*, de Joannis, on *Atriplex halimus*; thus it would appear that the habits of both species are practically identical, both feeding on insect remains and *débris* in webs.

Merton Hall, Thetford:

June, 1903.

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NOTES ON THE COMMENSALISM SUBSISTING BETWEEN  
A GREGARIOUS SPIDER, *STEGODYPHUS* SP., AND THE MOTH  
*BATRACHEDRA STEGODYPHOBIUS*, WLSM.

BY R. I. POCKOCK, F.Z.S.

Early in the summer of last year, a nest of a species of the South African gregarious Spider *Stegodyphus* was sent to me from Vredefort Road in the Orange River Colony, by Capt. G. E. H. Barrett-Hamilton, of the 5th Royal Irish Rifles.

The nest, which travelled safely with its colony of spiders in a small biscuit-tin, was transferred to a glass-case and mounted upon a branch of poplar, stripped of its leaves. The spiders soon got to



work and spun round the nest an extensive snare of white silk fastening it to the twigs of the branch, and to the walls, roof and floor of the case.

Four years ago\* Mr. G. A. K. Marshall drew attention to the discovery of the existence of a species of *Micro-Lepidoptera* as a messmate in the nest of a *Stegodyphus* in Mashonaland. He said :— “The larvæ in their frass-covered cases reside among the *débris* of dead insects, on which I presume they feed. In one nest six empty pupa-cases were found, from which the moths had evidently emerged. How they managed to escape from the heart of the nest seems little short of a marvel.”

Three species of *Stegodyphus* are known to inhabit Africa, south of the Zambesi, namely, *S. africanus*, Blackw., *S. gregarius*, O.P. Cambr., and *S. dumicola*, Poc. Of these the first mentioned is a northern type which extends into Mashonaland, but appears to be rare. Mr. Marshall has sent me a few specimens only. The second is known from Natal. A colony of it was sent some years ago by Col. Bowker to Lord Walsingham, and was subsequently exhibited in the Zoological Gardens, Regent's Park. The third is by far the commonest and apparently the most widely distributed, ranging from Mashonaland to the seaboard of Cape Colony. This, I believe, is the species in whose nest Mr. Marshall discovered the lepidopterous larvæ; and to this species, I believe, belongs the nest that was sent to me by Capt. Barrett-Hamilton, although the immaturity of the spiders forbids for the present a decided verdict on this point.

This enumeration of the species of South African gregarious spiders is given to draw the attention of collectors, who may be willing to extend our knowledge of this subject, to the advisability of securing both spiders and moths out of a web, for it is possible that several species of moths may be brought to light by that means.

There are also at least three gregarious species of *Stegodyphus* found in Western India and Ceylon. It would be interesting to know if they too harbour moths in their communities.

The first sign of the presence of living insects in the spider community in my keeping was the appearance of small larvæ crawling about the snare. Like the spiders, they were attracted from the nest by the warmth of the sun and retreated again into the darkness and shelter when the glass-case was replaced in the shade. They also emerged to feed upon the carcasses of the flies or other insects which,

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\* The Zoologist (4) II, p. 422, 1898.

with infinite labour and patience, the spiders hauled up as near the nest as possible, from whatever part of the web they might be in at the time of capture. The prey, however, was never actually taken into the inmost recesses of the nest. Hence the larvæ were compelled to seek it outside or go without it.

The spiders for the most part paid no heed to the larvæ, either passing them by without notice or merely halting for a moment to touch them inquiringly with feet or palpi. Now and again, however, one was eaten by a spider after a careful examination but without the display of avidity marking the manner of dealing with ordinary prey. Whether the lives of the few larvæ that were killed were sacrificed to irrestrainable hunger or to aberration of instinct on the part of the spiders, there is no evidence to show. It is certain, however, that on the whole the larvæ were safe from molestation.

Pupation took place within the nest. The moths, which emerged in small numbers in July, were perfectly at home in the web, being gifted apparently, like the spiders themselves, with some safeguard against the stickiness of the threads, which proved so fatal to other insects. Whether the spiders would have eaten them or not, I am quite unable to say. The moths certainly never gave them the chance. No sooner did the insect feel the vibration of a spider's approach, than it slipped away from the spot, using the long flexible antennæ to feel the way, and threading a passage through the network with a swiftness and precision which soon put a safe distance between itself and the slower and clumsier spider.

Sometimes the moths would traverse a wider space in the web by means of a short leap aided by slight lifting or half flutter of the wings; but flying in the ordinary sense of the word with wings outstretched to the full they never resorted to, possibly through fear of entanglement. They never evinced any desire to leave the web. At any time they might be seen resting on the threads or crawling apparently aimlessly amongst them, now near the outskirts of the snare, now in the vicinity of the nest. On cold dark days they would seek the seclusion of the nest; but the warmth of the sun would always attract them to the open and stimulate their dormant energies to activity. Pairing took place in the snare, and presumably the females retired to the nest to dispose of their fertilised eggs.

It is easy to see in what way the moths are benefited by associating with the spiders. They secure an asylum safe from the attacks of enemies, and food in abundance for their larvæ. But it is by no

means so clear by what means they prevailed upon the spiders to admit them in the first instance and to tolerate their subsequent residence, generation after generation, in the nest. That the larvæ may be useful as scavengers, devouring the carcases of the older generation of spiders of the community which, Mr. Marshall tells us, die in the passages in the Autumn, suggests itself as a possible explanation of the immunity from attack they enjoy. They may also aid in clearing away the refuse of insect remains which is left in the snare. Beyond this I can make no suggestions as to the part they may play in the economy of the society. That they are of some use to the spiders or are furnished with some special means of protection against them is highly probable, unless we fall back upon the supposition that their presence is tolerated through sheer indifference on the part of the spiders. It is true that the moths themselves are agile enough to evade the spiders and can come and go as they please; but it is surely equally true that the spiders could, if they pleased, kill the larvæ at any period of their existence, and the moths also immediately after their emergence from the pupal condition.

British Museum (Natural History):

May, 1903.

*Scarcity of Polyommatus argiolus near London in 1903.*—The gradual return of *Polyommatus argiolus*, L., to its old haunts in the immediate neighbourhood of London, which has been closely observed and carefully recorded during the past three or four years, has, I fear, sustained a severe check from the cold winds of this spring. Instead of seeing these lively little butterflies dancèing over and around my neighbour's plum trees, as has been the case in May and August of the last two or three years, I have this spring seen but a single specimen in the neighbourhood. This was at nearly the end of May, and it was flying over the shrubs in the pretty little Peckham Rye Park.—CHAS. G. BARRETT, Tremont, Peckham Rye, S.E.: June, 1903.

*On a habit of Dianthæcia conspersa.*—In the course of a few very pleasant days spent last summer in Oxfordshire with my esteemed friend Canon Cruttwell, I was struck, and somewhat surprised, by seeing *Dianthæcia conspersa* sitting in the day time upon the trunks of trees at a height of from four to five feet from the ground, and quite conspicuously. Every observant entomologist knows that although *Dianthæciæ* are readily collected in the larva state in seed capsules, and in the moth state at dusk, when sipping the honey from flowers, they are rarely seen in the day time, and that they doubtless conceal themselves closely among herbage; yet here was *conspersa* conspicuously visible by day. On one tree there were actually two specimens sitting within a foot of each other! To be sure the trees

were white poplars, and the white portions of their bark harmonized wonderfully with the marbled white wings of the moths, yet this would seem to be insufficient to alter the habits of a genus; or else to argue an acuteness of perception hardly to be expected in a moth.—ID.

*Agrotis Ashworthii* at Penmaenmawr.—I spent the last week of April this year at Penmaenmawr, North Wales, when I found a few larvæ of *Agrotis Ashworthii*, mostly nearly full grown, on the mountains; and with them, but in smaller numbers, those of *Agrotis lucerneæ*. On the streams *Philopotamus montanus* was already well out, but besides it and *Nemoura Meyeri* I noticed little else.—GEO. T. PORRITT, Edgerton, Huddersfield: May 21st, 1903.

*A sugar trap for Lepidoptera*.—With reference to Dr. G. B. Longstaff's interesting note under the above heading (*ante* pp. 124-5), I would mention, in further proof of his concluding remark as to the subject clearly deserving more attention, that one of the only two specimens of *Catocala electa* ever captured in Britain was taken in a "sugar trap" by myself on September 12th, 1892, as recorded in Ent. Mo. Mag., ser. 2, vol. iv, pp. 64-5. I there gave particulars as to the construction of the trap in which it was ensnared, and added that the only examples, two in number, of *Catocala nupta* that I had ever taken in this district were among the other victims secured therein. Although the trap in question, being designed to catch wasps and flies only, answers its purpose admirably, it would not be satisfactory for *Lepidoptera*, because of the great difficulty of getting the insects out of it when they have found their way inside. As regards Dr. Longstaff's wish for the explanation of the different behaviour of certain species of butterflies under similar conditions, I fear that this will ever be beyond "mortal ken," and that we must be content to wonderingly acknowledge the fact, of which numerous instances may be observed every day, that in all groups of animal life the various species frequently show marked differences from one another in some, or all, of their tastes and habits.—EUSTACE R. BANKES, Norden, Corfe Castle: April 30th, 1903.

*Mr. W. W. Froggatt on the larval habits of Nymphes and Psychopsis*.—In a batch of *separata* kindly sent me by Mr. W. W. Froggatt, F.L.S., Government Entomologist for New South Wales, is one entitled "Notes on Australian *Neuroptera* and their life-histories" (Proc. Linn. Soc. N. S. W., 1902) that especially interests me, inasmuch as it contains, so far as I know, the first indications of the larvæ and their habits in the peculiar genera *Nymphes* and *Psychopsis*.

Of *Nymphes myrmeleonoides* we read (p. 365) that "Larvæ were obtained at Armidale about the end of November, hiding amongst rubbish or clinging to overturned logs, so well coated with bits of dirt that only the front of the head and mandibles were exposed; until disturbed they remained perfectly motionless, but moved quickly when touched. In captivity they took no food, and after remaining for three weeks in a jar three of them pupated, forming typical rounded parchment-like pupal cases. From the situation in which they were found they would probably feed upon wood ants." From the detailed description that follows the larvæ would appear to be more akin to those of the *Ascalaphidæ* than to those of the *Myrmeleonidæ*, and also in habits. They are very strikingly Hemerobiid.



With regard to *Psychopsis mimica* we are told (p. 367) that "A living female was sent to me by a correspondent at Muswellbrook, which while in transit laid three bright green oval eggs. These were placed in a glass jar, and three weeks later two hatched out, and the larvæ were found crawling about trying to escape. When placed in a watch glass with some larval psyllids and aphides, they immediately seized these with their long mandibles and soon sucked them dry, the fluid running up the hollow jaws being easily observable with a lens. In spite of every care both larvæ died within a few weeks." Here again the aspect is very distinctly Hemerobiid.—R. McLACHLAN, Lewisham, London: June, 1903.

*Notozus Panzeri*, Fab., and its probable Hosts.—In a former number of this Magazine (September, 1900) I suggested that the Chrysid *Notozus Panzeri*, Fab., was probably parasitic on a *Mimesa*. My suspicion has been strengthened by later observations, and now almost amounts to a certainty. In June last year I found at Lyndhurst a regular colony of *Mimesa Shuckardi* extending along the sides of a sandy path. The ♂♂ were countless, the ♀♀ less abundant, but still fairly plentiful—many of them were pairing, others commencing to form their burrows, but I did not see any carrying prey.

I watched this settlement for several days, and during the whole time *Notozus Panzeri* simply swarmed all along it. I am sure I could have taken hundreds every day had I desired to do so, but two or three sweeps of my net—taking a dozen or so each time—more than contented me. I cannot say that I actually saw a *Notozus* enter a *Mimesa* burrow: probably the latter were not sufficiently advanced to invite the parasites' attacks. But the simultaneous occurrence of the two insects in such extraordinary numbers all along a considerable stretch of ground, where hardly any other *Hymenoptera* were to be found, can hardly have been accidental.

I have since observed the *Notozus* at Woking and Wisley in tolerable abundance, and have always found it accompanied by numerous specimens of some *Mimesa*, not however *Shuckardi*, but *equestris* at Woking, and *bicolor* at Wisley. In these cases, however, both insects were visiting umbellifers, and I could not find the burrows of the *Mimesa*, though they were doubtless hard by. I should have liked to investigate the matter further; but as I soon after went out of England I was obliged to postpone it to another season. This year I hope I may succeed in getting further evidence on the subject; in the meantime I would suggest to collectors who know of places haunted by *Mimesa* that they should be on the look out for *Notozus*. Besides *N. Panzeri* there is another very similar species (*N. productus*, Dahlb.), which has not yet been recorded from Britain, but which is quite likely to occur here.—F. D. MORICE, Brunswick, Woking: June 11th, 1903.

*Saw-flies from Jersey*.—Mr. Saunders has kindly given me the following Saw-flies, which he has taken during the last few weeks at St. Brelade's, Jersey. Though all the species occur in Britain, and none can be called actual rarities, they may be worth recording for the sake of their locality. All the specimens are ♀♀. *Atlantus vespa*, Retz. (= *3-cinctus*), *Pristiphora pallidiventris*, Fall., *Bleuocampa affinis*, Fall. (= *assimilis*), *Selandria stramineipes*, Klug, *Athalia spinarum*, Fab., *Emphytus*



tener, Fall. The *P. pallidiventr* is a very brightly coloured specimen (? var. *denudata*, Konow), with no black on the abdomen above except at the extreme apex (the saw-sheath).—ID.: *June 12th*, 1903.

*Hemiptera-Heteroptera in Jersey, June, 1903.*—I have just returned from a fortnight's visit to Jersey, and as the few *Hemiptera* I met with were nearly all such as are rare in Britain or not represented here at all, I thought a record of them might be useful. I was not specially collecting *Hemiptera*, as nearly all my time was devoted to the *Hymenoptera*, of which I hope to give a list of my captures in a future number, but I picked up such as came in my way; these were chiefly found in sandy spots, such as St. Ouen's Bay, Don Bridge, &c. I was of course too early for most of the *Hemiptera*, and some of the species were much more abundant in July, 1901, than they were this year (May 28th to June 10th). The species I secured were the following:—*Odontoscelis dorsalis*, F., St. Ouen's Bay; *Cydnu* *flavicornis*, F., St. Ouen's Bay and Don Bridge; *Brachypelta aterrima*, Forst., St. Ouen's Bay; *Menaccarus arenicola*, Scholtz, several, St. Ouen's Bay, running on the sand in the sun; *Alia acuminata*, L., St. Brelade's; *Therapha hyoscyami*, L., St. Ouen's Bay; *Nysius thymi*, Wolff, St. Ouen's Bay; *Henestaris laticeps*, Curt., St. Ouen's Bay; *Emblethis verbasci*, Fab., St. Ouen's Bay, Don Bridge, and Bel Royal (in July, 1901, this was abundant everywhere); *Beosus maritimus*, Scop. (*Iscus*, Fab.), St. Ouen's Bay; *Myrmedobia inconspicua*, D. & S., Don Bridge, one male running on the sand, this last is an interesting capture, as hitherto I believe it has not been recorded except from Great Britain. *Menaccarus arenicola* I fancy has not been noticed nearly so far north; Puton, in his Catalogue (1899), gives "Eur. m." as its distribution.—EDWARD SAUNDERS, St. Ann's, Woking: *June 13th*, 1903.

*Platypezidæ at Cambridge.*—This morning I saw a small fly being dragged away by an ant high up in my greenhouse. By the aid of a ladder I was just in time to catch it by the tip of its wings as it was disappearing into a crack of the wood. It was dead (perhaps killed by a spider), but not injured. It proved to be a ♀ *Platypeza furcata*. I had previously taken four specimens in my garden on June 22nd, 1902, and May 31st and June 2nd this year. *P. dorsalis* has also occurred: ♀, August 27th, September 16th, September 21st (Miss Allard); ♂, August 9th, September 17th, 19th, 21st, 1902, and May 12th of the present year, the last specimen dead in a spider's web on the greenhouse. Of *P. infumata* Miss Allard took a beautiful ♀ on May 11th, 1901, and I took a ♂ on October 16th, 1902. *Callimya speciosa* ♀ has occurred at least once, on May 3rd, 1902. *Agathomyia Collini* ♀ September 6th, 18th, October 17th (Miss Allard); ♂ September 18th, 1902, and previously in 1901, July 20th, one ♂ (in the next garden); August 6th and 7th, three ♀ (Miss Allard); August 12th, one ♂. This seems to be a good record for this small place; and more may occur yet.—FRANCIS JENKINSON, 10, Brookside, Cambridge: *June 10th*, 1903.

*Coleoptera near Reading.*—The north-east winds all this spring have proved most disastrous to insect life in this neighbourhood, as I expect elsewhere. For *Coleoptera* the beating and sweeping net has been almost useless, but the examina-

tion of rotten branches and bark has been more productive. In rotten wood my best take has been *Oxylemus variolosus*, Duft. I have taken more *Diplocoelus fagi*, Guér., under bark, also *Cicones variegatus*, Hellw., *Diphyllus lunctus*, F., and *Limobius dissimilis*, Herbst (evidently hibernating). Other captures of some interest have been *Odarantha melanura*, Payk., *Ilyobates nigricollis*, Payk., *Megaceronus inelinans*, F., *Smicronyx Reichei*, Gyll., and at Baughurst in Hampshire just over the Berkshire border, *Bembidium doris*, Panz., *B. Clarki*, Daws., *Corymbites tessellatus*, F., *Oodes helopioides*, F. Canon Fowler has kindly confirmed two of my last year's captures, viz., *Cryptopagus validus*, Kr., and *Orthoperus mundus*, Matth. I took several specimens of the latter hibernating under bark last winter, and one specimen by sifting near the same spot two years ago.—NORMAN H. JOY, Bradfield, near Reading: June 14th, 1903.

*Blaps gages*, L., in Suffolk.—On April 25th I received from Mr. W. H. Tuck, of Bury St. Edmunds, several examples of *Blaptidae*, a selection from a batch of some thirty which he had found in a cellar at his residence in that town. Five were *B. mucronata*, and two *B. similis*, but in addition to these there was a far larger insect which I at once recognised as *B. gages*, L. (= *B. gigas*, F.). The specimen is a fine ♂ in excellent condition, and when I received it, it was quite fresh, only just killed in fact. In the cellar in question had been stored some apples, potatoes, and sweet chestnuts, which Mr. Tuck had brought with him from his former residence at Tostock. It was while removing these from the cellar that the beetles were found, the solitary specimen of *B. gigas* being amongst the chestnuts.

This species has been recorded from the South of France, Greece, Morocco, and Algeria, but apparently not from more northern localities, and one is naturally inclined to fall back on the theory of foreign importation as explaining its presence in this country. Fowler, in his "British Coleoptera," says "in the late Mr. W. Garney's collection there is a specimen which was originally in Mr. Griesbach's collection, and was formerly taken in the south of England, but it is an evident importation." Apparently this must be the specimen referred to in Stephen's "Manual," where he encloses the account of the species in brackets, appending the note that it was said to have been taken at Portsea. This, if the record is reliable, may well have been a direct importation; but, in the present instance, the distance from the coast (from 20 to 30 miles), combined with the retiring and sluggish habits of the insect, makes such an explanation less satisfactory. One can hardly imagine the beetle travelling that distance on its own account, and its unnoticed transport by human agency seems unlikely, considering its size. The cellar in question was a sort of head-quarters of the beetles, for several larvæ were present as well. The larvæ are something like the ordinary mealworms, only larger and darker. The transport of a larva seems more likely than that of an imago, and I strongly incline to the belief that this particular beetle first saw the light on British soil, in which case the species would have as much right (though perhaps no more) to a place in our fauna, as several of those that already appear in our catalogues.—E. A. BUTLER, 53, Tollington Park, N.: May 23rd, 1903.

*A black variety of Carabus nemoralis*, Müll., on Dartmoor.—On April 14th last I captured a specimen of *Carabus nemoralis*, Müll., perfectly black in colour;

and, as such a variety is apparently unknown in Britain, it seems desirable to record it. With the exception of an extremely faint trace of metallic coloration (scarcely discernable with the naked eye) at the anterior angles of the thorax, the beetle much resembles *C. glabratus*, Payk., in colour. There is, however, no doubt as to its being *C. nemoralis*, and my friend, Mr. E. A. Newbery, quite agrees with me in its determination. The head and thorax are duller than is usual, and its general aspect is less robust and more parallel than in ordinary examples of the species. The insect is a male, 22 mm. in length, and in measurement, at their widest part, its elytra prove to be just half a millimetre narrower than those of a normal ♂ example of the same length; the thorax is also proportionate. The beetle was found briskly walking on the bank of a Dartmoor stream some 16 miles from Plymouth.—J. H. KEYS, 6, Seymour Terrace, Plymouth: June 12th, 1903.

### "Obituary."

*A correction.*—We take the earliest opportunity of stating that the announcement of the death of Dr. F. MEINERT (*cf. ante* p. 153) was due to a misapprehension on our part. We tender him our sincere apologies, and at the same time congratulate him on having recently celebrated his 70th birthday.—EDS.

### Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: May 18th, 1903.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. R. C. Bradley showed a fine series of *Bombylius discolor*, Mik, from Ventnor, Isle of Wight, where they were taken last April. All the males, and they chiefly consisted of that sex, were taken in one small spot, though he believes they were to be found all over the Island at the time. Mr. J. T. Fountain showed a series of *Dasychira pudibunda*, L., bred from a female found at Sutton Coldfield last year; also a series of *Teniocampa munda*, Esp., from Yorkshire, bred; one of them was reddish in colour, and the black spots were represented by a reddish blotch on either wing, the pair of dots being only just discernible; also a few butterflies taken by a soldier friend in Sierra Leone. Mr. Bethune-Baker exhibited another boxful of Sierra Leone *Lycenidae*, including some new species.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, April 9th, 1903.—Mr. E. STEP, F.L.S., President, in the Chair.

Mr. R. Adkin exhibited a short series of *Phigalia pedaria*, bred from York larvæ, and remarked particularly on the intensely black coloration which had been developed in both sexes. Mr. Turner, an example of the *v. trapezaria* of *Crocallis elinguaris* from Brockley, and pointed out the very dark central band, its distinguishing character. Also a short series of *Cleora glabraria* from the New Forest, and remarked that the species had recently been taken in N. Devon by Mr. Tunaley.

April 23rd, 1903.—The President in the Chair.

Mr. Harrison and Mr. Main exhibited a long bred series of *Tæniocampa munda* from ova laid by two females captured in 1902 in Epping Forest. The series exhibited all the forms of the ground colour, from *v. pallida* and *v. grisea* to an extreme form of *v. rufa*. Many were sprinkled with dark scales as in *T. pulverulenta*. Most of the specimens were of the *v. geminatus*, with six well developed black spots in the submarginal line. Mr. Turner, (1) specimens of *Blabophanes imella* and *Lita aethiops* from Bonhill, Dumbartonshire: (2) a series of *Sitones griseus*, taken on broom at Horsell Common by Mr. Kemp and himself; (3) living larvæ and cases of the following *Coleophora*: *C. genistæ* from Loughton, *C. cæspititiella* from Loughton, *C. pyrrhulipennella* from Woking, *C. albitarsella* from Ashstead, and *C. auricella* from Locarno; the last named sent by Dr. Chapman. Mr. Goulton, a variety of *Noctua festiva*, with the external half of the wing beyond the stigmata of a very deep chestnut-brown; and a variety of *Plusia gamma* having various red markings and darkenings, forming *v. rufescens*. Mr. West (Greenwich), specimens of three species of *Hemiptera* from Box Hill, *Corimelana scarabaeoides*, *Tropistethus holosericeus*, and *Tettigometra impressopunctata*. Mr. Carr, living larvæ and cases of a Psychid, *Bacotia sepium*, beaten from fir in the New Forest. Mr. Step, living specimens of *Anthrenus museorum*. The Secretary had heard from various members who were spending Easter on the Continent. Dr. Chapman had stated that at Locarno the weather was cold, but some twenty species of butterflies were observed on April 20th. Mr. Sich had noted *Papilio Podalirius* as common near Lake Como. Mr. Tutt had had very fine weather at Hyères. Mr. Cant and Mr. MacArthur reported having seen a furze-chat hawking very successfully for *Brephos parthenias*.

May 14th, 1903.—The President in the Chair.

Mr. Shakespeare, of Kingston-on-Thames, was elected a Member.

Dr. Chapman exhibited a pair of *Grællsia Isabella* bred from larvæ found at Broncholes in 1901; a piece of bark from the Italian Riviera closely set with the helix-like cases of the Psychid *Apterona crenulella*, which was locally abundant in 1902. Mr. Carr, larvæ of *Ellopiæ prosapiaria* (*fasciaria*) and *Bryophila perla* from the New Forest. Mr. Step, photographs of *Panolis piniperda* and *Tephrosia punctularia* in their position of rest on tree-trunks. Mr. West (Greenwich), three species of somewhat uncommon *Staphylinidæ*, *Mycetoporus angularis*, among dried leaves at Shirley, *M. nanus*, in moss at Box Hill, and *Pseudopsis sulcata*, in decayed vegetable matter at Oxshott. Mr. Kirkaldy made remarks on the Maternal Solicitude of female insects for their young, and asked members to make observations on the subject during the present season. Mr. Turner called attention to an instance of birds attacking butterflies, and asked the members to furnish the Society with details of any case which came under their notice. It was suggested that members who were making photographs of Scientific Objects should give the Society a print, so that an album could be arranged to illustrate some line of study. The ova of the *Lepidoptera* were very little known, and might form a good subject for investigation.—H. T. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: May 6th, 1903. Professor E. B. POULTON, M.A., D.Sc., F.R.S., President, in the Chair.

The President exhibited one of the original invitations to join the Society, issued



in 1834, and signed "G. R. Gray, Secretary, pro tem." Mr. Willoughby Gardner exhibited nest cells of *Osmia xanthomelana* from Conway, North Wales. He said the species, one of our rarer mason bees, places its beautifully constructed pitcher-shaped cells at the roots of grass, usually four or five together. There is no previous record of the nest having been found since Mr. Waterhouse discovered and described it from Liverpool about sixty-five years ago. Mr. M. Jacoby, *Arsoa longimana*, Fairm., and *A. aranea*, from Madagascar; also *Megalopus melipona*, Bates, and *M. pilipes*, from the Amazon, which bore a remarkable resemblance to a bee. Mr. A. J. Chitty, a water-beetle new to Britain, viz., *Hydroporus bilineatus*, Sturm, discovered by Mr. Edward Waterhouse among some specimens of *Hydroporus* given by Mr. Chitty to him as *H. granularis*. The specimens were taken at Deal in 1891, and probably all records of *granularis* from Deal related to this species. He also exhibited a specimen of the rare *Trechus rivularis (incilis)*, of Dawson, taken at Wicken Fen in August, 1900. Mr. O. E. Janson, specimens of *Neophædimus melaleucus*, Fairm., a goliath beetle from Upper Tonkin, and remarked that the white colouring was derived from a dense clothing of peculiar semi-transparent coarse scales, which were apparently easily removed by abrasion, and seemed to partake of the nature of the "fugitive" scales found upon freshly-emerged specimens of *Hemaris* and other *Lepidoptera*. The President read a communication from Mr. G. F. Leigh, on "Protective Resemblance and other modes of Defence adopted by the Larvæ and Pupæ of Natal *Lepidoptera*." He also showed a specimen of *Grapta c-album* in the attitude of prolonged repose, together with specimens of *Anæa moeris* set in different ways to illustrate its probable resting position; he said that probably the "C" or "comma" on the under-surface of the hind-wings in butterflies belonging to the genus *Polygonia (Grapta)* represents in bright, strongly-reflecting "body-colour," the light shining through a semicircular rent in a fragment of dead leaf—the rent produced when a little segment of leaf has broken away along a curved line, but still remains connected with the rest—across the chord of the arc. Unless such a segment remains precisely in the plane of the leaf light may pass through a curved and often a semicircular slit-like window. Professor Poulton also exhibited a pair of *Hypolimnas misippus* taken "in coitu" by Mr. Horace A. Byatt, B.A., near his highland house, at an height of 4500—5000 feet, in Dedza, Central Angoniland, British Central Africa. The specimens are remarkable in that the female is excessively worn and old, far more so than the male. Such an observation tends towards the conclusion that pairing occurs more than once in the life of an individual of this species. Mr. G. A. J. Rothney communicated "Descriptions of twelve new genera and species of *Ichneumonidæ*, and three new species of *Ampulex* from India, by Peter Cameron."

June 3rd, 1903.—The President in the Chair.

Mr. G. C. Champion exhibited numerous specimens of *Coccinella distincta*, taken in the pine woods of Woking. They were found, as usual, running about the ground in company with *Formica rufa*, and were perhaps wanderers from some other locality. Mr. Donisthorpe said the species was still common at Weybridge in the nests of *Formica rufa*, and that he had observed it also at Bexhill, while Mr. Chitty noted its former occurrence in Blean Woods in great numbers. The history of the larvæ, he said, had not been worked out. Mr. H. St. J. Donis-



thorpe, a very remarkable melanic form of *Halysia 18-guttata*, L., black with white spots, the type, which was also exhibited, being light brown with white spots. The former was taken at Oxshott on the 22nd May. He also exhibited *Stiliclus fragilis*, Gr., a melanic form with a black thorax instead of red as in the type, taken at Shirley on May 15th; and *Staphylinus fulvipes*, Scop., taken by himself at Bamber Forest on June 1st, a new locality for this rare beetle. Dr. T. A. Chapman, two full-grown larvæ of *Thestor ballus*, sent by Mr. H. Powell, from Hyères, and described them in their various stages. He also exhibited a larva of *Heterogyna paradoxa*, full fed, reared from the egg at Reigate, and a cocoon of *Orgyia auro-limbata*, with parasitic Ichneumonid. In this instance a larva produced an imago and the parasite. The cocoon when opened last October showed the cocoon of an Ichneumon within it; a dense oval ribbed cocoon of whitish silk, with longitudinal darker flutings. The Ichneumon and the moth both came from the same larva, and the moth, though containing few eggs and (not being fertilised) laying none, was nevertheless energetic enough to denude herself of all her clothing. An imago and a parasite from the same larva have not infrequently been recorded, but the occurrence has been frequently doubted. The President, the dry form of *Precis actia* bred by Mr. Guy A. K. Marshall from an egg laid by a female of the wet form. The parent was captured by Mr. Marshall at Salisbury, Mashonaland (5000 ft.), on February 14th, 1903: the egg was laid on the following day. It hatched February 20th, the larva pupated March 16th, the perfect insect, a male, emerged March 28th. The differences between these two forms are as astonishing as those between the two phases of *Precis antilope* bred, the dry from the wet, by Mr. Marshall. The representation of a dead leaf in the dry *actia* is slightly more elaborate than in *antilope*. Both species have an equally beautiful midrib-like stripe, but the former alone presents the appearance of minute holes near the tip of the simulated leaf—due to two white semitransparent spots. This is the third South African species of the genus *Precis* in which Mr. Marshall has produced incontrovertible evidence of the specific identity of forms widely separated in colours, patterns, shape, relation of upper- to under-side, &c., and even instinct, including the selection of a particular type of country. The President also showed a small series of ants, part of a much larger collection made by the late W. J. Burchell in Brazil between the years 1825 and 1830. They were obtained with his other vast zoological and botanical collections at Rio or its neighbourhood, or in the course of the long journey from Santos to Pará. Considering their great age the specimens were wonderfully well preserved and accompanied by remarkably exact and detailed data, and, in many cases, interesting notes on habits, instincts, &c.

Mr. O. E. Janson communicated a paper "On the genus *Theodosia*, and other Eastern Goliathides, with descriptions of some new species." Colonel C. Swinhoe communicated a paper on "New genera and species of the family *Lymantriidae* in the National Collection." Mr. G. W. Kirkaldy communicated a "Memoir on the *Rhynchota* collected by Dr. Arthur Willey chiefly in Berara and Lifu." Professor E. B. Poulton gave an account of "Experiments in 1893, 1894, and 1896 on the colour relation between certain Lepidopterous larvæ and their surroundings, and especially the effect of lichen-covered bark upon *Odontoptera bidentata*, and *Lasiocampa quercifolia*."—H. ROWLAND-BROWN, *Hon. Sec.*

## SPANISH AND MOORISH MICRO-LEPIDOPTERA.

BY THE RT. HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S., &amp;c.

(Continued from Vol. XXXVII, p. 239).

Having to a certain extent sampled the *Micro-Lepidoptera* of Andalusia in 1901, my short visit to Tangier in that year tempted me to spend the winter and spring of 1901—2 in Morocco; the results induce me to extend the scope of my paper to include a few observations upon the species found there. The work already done in this connection is to be found in the following papers:—

1. STANTON (H. T.).—" *Lepidoptera* collected in Morocco" [by Mr. Trovev Blackmore], "*Tineina*," Ent. Mo. Mag., V, 300—1, London, 1869.
2. STANTON (H. T.).—"List of *Tortricina* and *Tineina* collected in North-West Morocco, by Mr. Trovev Blackmore, in 1870—1," Ent. Mo. Mag., VIII, 232—6 (1872).

The only species which I have had any difficulty in recognising among those referred to by Stanton as collected by Blackmore in the neighbourhood of Tangier are a *Butalis* and a *Cemiostoma*, the latter neither named nor described. His identifications require a few criticisms but are mainly correct.

The first species that calls for remark is *Grapholita succedana*, Fröl. (Stn., Ent. Mo. Mag., VIII, 232), about which Stanton wrote with some uncertainty. I think this is, as he suspected, quite different from our English *ulicetana*, Hw., a synonym of *succedana*, Schiff., Fröl., and have described it as *Laspeyresia blackmoreana*, Wlsm. It seems to be attached to *Retama monosperma*.

His *Grapholita*, n. sp.?, allied to *microgrammana* (Stn., Ent. Mo. Mag., VIII, 233), I bred from a larva burrowing in the stems of *Malcolmia littorea*, abundant on the sandhills near Tangier, and at present I have not been able to distinguish it from specimens bred in April, 1901, from larvæ feeding in *Alyssum maritimum* at Gibraltar in March. This is now described as *Eucelis malcolmiae*, Wlsm.

*Phthoroblastes spiniana*, Dp. (Stn., Ent. Mo. Mag., VIII, 233), is a wrong identification. I have described it as *Pammenc cocciferana*, Wlsm., a species greatly resembling *spiniana*, but more easily confused with *albuginana*, Gn. (*gallicolana*, Z.). It is very abundant among low growth of *Cistus salviæfolius* and *crispus*, in company with *Grapholita salvana*, Stgr., of which I was at first disposed to regard it as a variety developing a white dorsal spot. It bears the same relation to *salvana* that *gallicolana*, Z., bears to *amygdalana*, Dp., formerly regarded as a mere variation.

The next species mentioned, a dull coloured *Eupæcilia* (Stn., Ent. Mo. Mag., VIII, 233), was almost certainly *Phalonia pudorana*, Stgr., common among *Solidago*, on which the larva feeds.

Of the *Lozopera* n. sp.? (Stn., Ent. Mo. Mag., VIII, 233), I bred a good series from *Elæoselinum meoides*. It was described by me as *Lozopera* (‡*Loxopera*) *mauritanica* [Ent. Mo. Mag., XXXIV, 73 (1898)].

Among the *Tineina* (Stn., Ent. Mo. Mag., VIII, 233—6), *Solenobia pretiosa*, Stn., is extremely common; so are *Micropteryx imperfectella*, Stgr., *Platyedra vilella*, Z., *Elachista sepulchrella*, Stn., and *Lithocolletis tangerensis*, Stn., the latter was said to have been beaten from *Coronilla* at the Marshen, and was suspected to feed on that plant, but the conspicuous shrub so abundant there is *Cytisus linifolius*, not a *Coronilla*. Should any one choose to call it *Genista linifolia* I take refuge in excusable ignorance of the limits of botanical genera.

The larva of *Lithocolletis tangerensis* feeds in the small narrow leaves of this plant in great abundance. Here again I may remark that the plant is very like an *Adenocarpus*, and the insect is nearly allied to, although distinct from, *adenocarpi*, Stgr.

I did not meet with *Tischeria complanella*, Hb., at Tangier, but a suffused form of *marginea*, Hw., from hedges where *Rubus* occurs is not uncommon; the typical *marginea* is absent, but I can only regard its representative as a variety.

*Leioptilus carphodactylus*, Hb. (Stn., Ent. Mo. Mag., VIII, 236), identified from a worn specimen, was not improbably a species found very commonly in the larval state in one very damp locality on Gibel-el-Kebir. I collected a number of larvæ, but bred only one good specimen. It fed in shoots of young plants of *Solidago*, and of another plant (also very young and therefore not identified) from the same spot. This is possibly *Pterophorus scarodactylus*, Hb., but seems to differ in having three dorsal and one apical spot on the tornal lobe of the fore-wings, and one dorsal on the costal lobe before the apex. The larva greatly resembles that of *scarodactylus* in shape and markings, so much so as to prevent me from taking the responsibility of describing it as new, although it should be easily recognised from bred specimens.

*Coleophora cæspititiella*, Z. (Stn., Ent. Mo. Mag., VIII, 235). This identification may of course be correct, but after the careful observations published by Dr. Wood, resulting in the separation and description of other species, hitherto confused with it in European collections, it would not be safe to accept it.

Among the localities mentioned in Stainton's paper the Marshen still affords some good collecting ground on its rocky slopes ; but the opposite hill on the other side of the Jew's river is better, owing to its more varied vegetation, and on this hill a certain shady lane between enclosed villas, of which the best known is Mount Washington, proved rich in species. I obtained many good things here by beating the dry fences made of faggots, or wattles, of dead *Eucalyptus* and *Cytisus*. The lane emerges on high ground on the road to Cape Spartel, open on both sides, with abundant growth of *Cistus ladaniferus*, *crispus*, and *salviaefolius*, with some heath ; *Arbutus*, *Helianthemum halimifolium*, and *Teucrium fruticans*, a new *Adela* (*collicolleta*, Wlsm.), and a new *Pammene* (*ornata*, Wlsm.) occurred here. Another branch of the same lane running more to the west leads to an abundant growth of *Lavatera olbia* on which two interesting species are common : *Bucculatrix lavaterella*, Mill., and *Gracilaria hedemanni*, Rbl., the latter described from the Canaries. The larva of this species makes blotch-mines in the leaves, and one generation seems to follow another in rapid succession, so that it is almost always to be found. When full-fed it reminds one much of *Acrocercops brongniardellum*, F., having the same brilliant red transverse bands across the dorsum.

A very curious gall, or swelling, in old and young wood of *Teucrium fruticans* is probably attributable to a new species of *Phalonia*, but although I collected a good supply of larvæ and found hundreds of empty pupa cases in the older wood, the larvæ were still too young when I left Tangier, and at present I have not succeeded in breeding a single specimen.

What Mr. Blackmore described to Stainton as the "Wad-el-Halk" locality is easily recognised, and lies in the direction of the house now built by Mr. Harris on the other side of the tidal river east of Tangier.

In the grounds surrounding Mr. Harris' garden I found a great variety of plants and insects ; this spot produced among other good things two specimens of the very rare *Pharmacis chamomillana*, Hb., unfortunately in poor condition (this is = *pentaetina*, Mn., from Corsica).

The "peculiar kind of white broom" mentioned by Stainton (Ent. Mo. Mag., VIII, 232) is of course the lovely *Retama monosperma* ; an undescribed *Lithocolletis* appears to be attached to this plant, but I have not discovered its mine.

I propose to extend the list of species from Morocco very considerably in the course of this paper, but shall begin by describing a



few which are obviously new. Had I not been called back to England, thus losing a good month from the middle of March to April 16th, the list would have been a longer one, but my Italian valet, Ignazio Sola, took to the pursuit very keenly, and became an excellent collector; his previous experience with me in Corsica having been by no means forgotten. He was thus able in my absence to fill up several gaps, especially by attending to the bottles containing larvæ and pupæ, without his help I should have been disappointed in many instances, and he took several things which I had not met with.

The only excursions made from Tangier on the African coast were to the neighbourhood of Cape Spartel and to Tetuan; at the Caves of Hercules near the former, my little *Aristotelia frankeniz*, first found in Corsica and subsequently at Malaga, proved abundant in company with *Polychrosis hibernana*, Stgr.; at the latter, in spite of very bad weather, I first made acquaintance with *Tachyptilia mauricaudella*, Oberth. (= *mirabilis*, Stgr., *LN.*), its habit is to rest in the flowers of a species of mallow, two or three being often found in one flower-tube, although frequently concealed from view until the flower is torn open. *Pleurota bicostella*, Cl., also occurred here in some abundance, obviously attached to a species of *Lavandula* (probably *dentata*), from which it was beaten wherever this occurred, and in some places where all other vegetation was conspicuously absent—it must certainly have fed upon this plant.

A very pretty new *Borkhausenia* (*iagathella*, Wlsm.), found also at Tangier, occurred near the town.

In the course of my excursion I visited Chielana twice and Malaga once, but spent a very short time on each occasion. The first of these visits was on January 26th, to look for *Gelechia gaditella*, Stgr., at Cadiz, recorded as being taken on January 29th, outside the Landthor. It was not difficult to identify the Landthor with Puerto del Tierra, within a few hundred yards of which was abundant hedge-growth of *Lycium europæum* and *Atriplex halimus*. On the former I at once observed mines of my *Gelechia lyciella* [Wlsm., Ent. Mo. Mag., XXXVI, 217 (1900)], and jumped at the conclusion that this would turn out to be *gaditella*, Stgr., the description fairly applying to it, except in the yellow or more ochreous colour of the fore-wings. This species was not on the wing, so I abandoned the search and went to Chielana, but on my return two days later, on the very day on which Staudinger took them in 1858, I found the true *gaditella* flying in great abundance by the side of the road among *Atriplex halimus* about a mile and a half from Cadiz. The difference between the two



was at once apparent, and on a subsequent occasion I was fortunately able to find the larvæ of a later brood feeding on *Atriplex halimus*, and to rear a few specimens of this beautiful little species.

1528 : 1.—*ARCHIPS GRANADANUS*, *sp. n.*

*Antennæ* sparsely biciliate (1); pale fuscous. *Palpi*, *Head* and *Thorax* brownish ochreous, the head slightly paler posteriorly. *Fore-wings*, ♂ brownish ochreous, with a slight pale reddish fawn-brown suffusion, becoming more intense on the outer third; a weak costal fold extends from the base to a bluish black cuneiform costal spot about the middle, somewhat obliquely placed and pointing outward, half-way between this and the apex is a faint lunate reddish brown costal patch; opposite to this, before the tornus, is a small spot of the same colour; the basal third of the terminal cilia greyish fuscous, fading towards the tornus, the outer two-thirds of the cilia, clean yellowish white, tinged with ochreous about the tornus: ♀ without markings, uniformly brownish fawn-ochreous, the dark line along the base of the white terminal cilia being as conspicuous as in the ♂. *Exp. al.* ♂ 16—♀ 20 mm. *Hind-wings* pale rosy brownish; cilia whitish, somewhat suffused with brownish, except towards the apex, a pale brownish shade running along their basal third throughout. *Abdomen* and *Legs* brownish, rather shining.

*Type*, ♂ (86119); ♀ (87013). Mus. Wlsm.

*Hab.*: SPAIN—GRANADA—Sierra Nevada, 4000—5000 ft., 3. VI.1901; Granada, 17.VI.1901. Two specimens.

The ♂ was beaten from a species of *Berberis* on the Sierra Nevada, at between 4000 and 5000 ft., the ♀ occurred also on high ground near Granada, but I do not remember to have observed any *Berberis* where this specimen was taken. Like its near ally, *unifascianus*, Dp., from which it is distinguished by its white cilia with strong basal line, it is probably polyphagous.

1647 : 1.—*LOXOPERA RUBIGINANA*, *sp. n.*

*Antennæ* pale ochreous. *Palpi* and *Head* brownish ochreous. *Thorax* bright rust-brown. *Fore-wings* shining silvery white on the apical third, densely suffused with brilliant rust-brown on the basal two-thirds; this suffusion extends farther along the dorsum than along the costa, almost obliterating two oblique dorsal streaks of an even more intense colour, the inner one arising at one-third from the base and tending obliquely outward to the upper edge of the cell before the middle of the wing; the second arising before the tornus, narrower and slightly more oblique but much shorter; the outer edge of the rusty suffusion is not clearly defined, some few scales of the same colour being visible on the white space beyond it; cilia yellowish-white. *Exp. al.*, 14—15 mm. *Hind-wings* pale grey; cilia white. *Abdomen* darker grey; anal tuft whitish cinereous. *Legs* whitish cinereous.

*Type*, ♂ (87451). Mus. Wlsm.

*Hab.*: MOROCCO—Mt. Washington (Tangier). Larva in old stems of *Thapsia*, *sp. excl.*, 11-13.IV.1902 (Wlsm.). ALGERIA—

[found in room at Biskra, 23.III.1895—probably bred from pupa (8311) of larva mining stems of *Ferula communis* on M'cid (Constantine), X—XI, 1894 (Eaton)]. Four specimens.

A very distinct species, of which the nearest allies are *deaurana*, Peyr., and *ferruginea*, Wlsm., but in both of these the markings are less oblique and less obliterated, moreover, they reach the costa. The hind-wings are also darker, and the two species are of somewhat larger size.

I received this first from the Rev. A. E. Eaton, who believed that a specimen found in his room at Biskra, 23.III.1895, had emerged from an empty pupa of larvæ mining stems of *Ferula communis* collected at Constantine. I have now bred three specimens from larvæ feeding in old stems of *Thapsia* sp. at Tangier.

1688. PHALONIA MORIBUNDANA, Stgr.

n. syn. = 1759. *respirantana*, Stgr.

*Cochylis moribundana*, Stgr., Stett. Ent. Ztg. XX. 230. (1859)<sup>1</sup>; Hor. Soc. Ent. Ross. XV. 244—6. (1879)<sup>2</sup>. *Cochylis respirantana*, Stgr. Hor. Soc. Ent. Ross. XV. 246. (1879)<sup>3</sup>; Rag. Ent. Mo. Mag. XVII. 232. (1881)<sup>4</sup>. *Conchylis respirantana*, Rag. Ann. Soc. Ent. Fr. LXIII. (1894). 191 (1894)<sup>5</sup>; Sbl. Deutsche Ent. Zts. Iris XI. 304. (1898)<sup>6</sup>; Stgr. and Rbl. Cat. Lp. Pal. II. 1688. (1901)<sup>7</sup>. *Conchylis moribundana*, Stgr. and Rbl. Cat. Lp. Pal. II. 1759. (1901)<sup>8</sup>.

*Hab.*: ASIA MINOR <sup>7, 8</sup>—SIVAS, Amasia, 10—21. V<sup>3</sup>, VI<sup>2</sup>, S.VII<sup>3</sup>; KHUDAVENDIKIAR — Brussa <sup>2</sup>. TURKEY — Macedonia <sup>2, 8</sup>. AUSTRIA—Dalmatia <sup>2, 8</sup>. PORTUGAL <sup>8</sup>—Silves, 16.V <sup>4</sup>. SPAIN (Andalusia <sup>6-8</sup>); CADIZ—Algeciras, 4.III.1901; Chiclana, 28.II.1901, Larva—*Phlomis purpurea*, II, excl. 5.III.1901; GRANADA—Granada, 6—16.VI.1901; MALAGA—Malaga, 6.III.1858 <sup>1</sup>; 28.I.—18.II, 15—27.III, 30.IV.—1.V.1901, Larva in seeds *Phlomis purpurea* I. excl. 28.II.—24.III.1901.

This species was originally described from a single specimen found at Malaga. I found the larvæ very commonly there, and also at Chiclana feeding on the seeds of *Phlomis purpurea*, and took the species on the wing at both places.

Specimens answering to the description of *respirantana* are by no means uncommon in my very extended series, and undoubtedly confirm the suspicions entertained by Staudinger that *respirantana* is a mere variety of *moribundana*.

1758: I.—PHALONIA LOXOPEROIDES, sp. n.

*Antennæ* pale yellowish ochreous, brownish at the base. *Palpi* whitish ochreous. *Head* and *Thorax* pale straw-yellowish. *Fore-wings* pale straw-yellowish, with

shining silvery white scales intermixed between and upon the fasciæ; two oblique and nearly parallel rust-brown fasciæ, the first arising from before the middle of the dorsum, slightly narrowed at the lower edge of the cell, bulging outward on the cell, partially interrupted below the costa and terminating in an elongate spot at the middle of the costa, from which to the base the costa is narrowly shaded with rust-brown; the outer fascia, of equal width, arises before the tornus and terminates on the costa before the apex, it is slightly narrowed opposite to the end of the cell and runs nearly parallel to the termen throughout, these fasciæ are slightly mottled with darker brown and silvery grey scales; cilia yellowish white, with a slender yellow line running through them near their middle; under-side brownish, with silvery cilia. *Exp. al.* 12 mm. *Hind-wings*, ♂ without subcostal fold and hair-pencil; shining pale brownish grey; cilia whitish; under-side greyish white. *Abdomen* yellowish ochreous. *Legs* brownish grey.

*Type*, ♂ (86145); ♀ (87486); Larva (87490). Mus. Wlsm.

*Hab.*: SPAIN—GRANADA—Granada, 13-19.VI.1901. MOROCCO, Tangier, 19.IV—9.V.1902, Larva in stems of *Carum verticillatum*, 12.III.excl. 4—18.V.1902. Fourteen specimens.

*Larva* dull greenish; head black; pronotal plates olive-greenish, posteriorly piceous; thoracic legs piceous.

A small species which has so much the appearance of a *Loxopera* that no one would ever think of separating it from that genus except by a study of its neuration (veins 7 and 8 of the fore-wings being separate, not stalked). In the absence of the slight costal fold and hair-pencil in the hind-wing of the ♂ it differs from at least the majority of the exponents of *Phalonia*, Hb. This character has been much overlooked, and its value in generic limitation is therefore at present of doubtful importance.

#### 1787: 1.—PHALONIA PUELLANA, *sp. n.*

*Antennæ* pale brownish grey. *Palpi* white, pale ochreous on the outer-side. *Head* white. *Thorax* pale ochreous. *Fore-wings* whitish ochreous, much suffused with pale brownish ochreous, especially on the basal third, on the central fascia, and about the terminal portion of the wing; the fascia, which is somewhat obscurely indicated, arises narrowly on the dorsum, before the middle and tending obliquely outward becomes sinuate across the middle of the wing, ending in a rosy-pink suffusion with a few fuscous scales on the costa to which it is bent back above the middle; a pale rosy suffusion is traceable all along the costal third of the wing and becomes more intense towards the apex, the brownish ochreous shading being slightly interrupted by paler scales opposite to the middle of the termen; cilia pale brownish ochreous; under-side greyish, with a rosy suffusion about the apex. *Exp. al.* 9—10 mm. *Hind-wings* pale greyish; cilia shining whitish; under-side shining pale bluish grey. *Abdomen* pale grey; anal tuft pale ochreous. *Legs* whitish.

*Type*, ♂ (87365); ♀ (87374). Mus. Wlsm.

*Hab.*: MOROCCO—Tangier, 11-16.V.1902. Eleven specimens.

Taken among *Scabiosa* and *Retama monosperma*, but I was unable to obtain any indication of its food-plant. It is closely allied to *infantana*, Knl., and *roseofasciana*, Mn., but has a more washed-out appearance, the markings being less distinct, and the rosy flush confined to the costal third.

Oberthür's figure of his supposed *ostrinana*, Gn. [Etud., Ent., XII, 43, Pl. VI, 26 (1888)], strongly reminds me of this insect, but he specially mentions that Guenée's type, which he also possesses, is, "plus foncé; il a la teinte de *Purpuratana*, H.-S.", and the figure by no means represents the usual forms of *purpuratana*, H.S., sunk by Ragonot as a synonym of *ostrinana*, Gn.

While agreeing with Ragonot in this synonymy I am greatly inclined to think that the species figured by M. Oberthür must be a distinct species.

2010 : 1.—GYPSONOMA PÆDISCANA, Stgr.

*Grapholitha pædiscana*, Stgr., Stett. Ent. Ztg., XX, 233, No. 59 (1859).<sup>1</sup>

*Hab.* : SPAIN—GRANADA—Granada, 6-10.VI.1901; MALAGA—Malaga, 13.III.1901; SEVILLA—Seville, Larva *Populus alba*, XII, 1900, excl. 29.I—9.III.1901; HUELVA—Coto, 24.IV.1901; CADIZ—Chiclana, IV.1858<sup>1</sup>. MOROCCO—Tangier, 2.V.1902.

This species, which is very closely allied to *dealbana*, Fröl., may be distinguished by its more deeply sinuate termen, and by its usually narrower white fascia.

I have bred it from *Populus alba*, and met with it plentifully in different parts of Andalusia, but have never found the larva boring the twigs after the manner of *dealbana*. It seems invariably to live between united leaves.

2044 : 1.—THIODIA STRIGULATANA, Knl.

*Grapholitha strigulatana*, Knl., Deutsche Ent. Zts. Iris, XII, 41-2, No. 39. Pl. I. 40 (1899)<sup>1</sup>; Stgr. and Rbl. Cat. Lp. Pal. II. 2167 (1901)<sup>2</sup>.

*Hab.* : MONTE CARLO, 2.VI.1899. FRANCE (Pyr. or.)—Vernet, 26.V.1899; Thuès-les-bains, 28-30.VI.1900. PORTUGAL<sup>1</sup>. MOROCCO—Tangier, 22.III.1902.

This species, of obscure colour and without discal markings, except so far as they are indicated by two very slight clouds, cannot well be confused with any other. It is of rather large size, some specimens being quite equal to the largest forms of the variable

*aspidiscana*, Hb., in colouring it nearly resembles the true *wimmerana*, Tr. (not *candidulana*, Nlk., = the species which has passed under the name of *wimmerana*, Tr., *teste* Wilk., in English collections), but it differs in the much less distinct costal streaks, and the almost total extinction of the ocelloid patch, as well as in its larger size (18–22 mm.). I first met with it at Vernet in May, 1899, and subsequently, in the beginning of June the same year, at Monte Carlo, and put it aside as probably a variety of some known species. Finding it again at Thuès-les-bains in the following year, as late as the end of June, I was still unable to recognise it, but having met with two specimens at Tangier in March, 1902, I have no hesitation in identifying them all as *strigulatana*, Knl., described from “Lusitania.” The Morocco specimens are slightly larger than the European, but cannot be separated from them by any other distinguishing character. The range of the species appears to be fairly wide.

(To be continued).

# HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH TENTHREDINIDÆ, &c. (4).

BY THE REV. F. D. MORICE, M.A., F.E.S.

## SYNOPTIC TABLE OF GENERIC CHARACTERS.

Each Section of this Table is numbered *on the left*; a figure in brackets following refers back to the Section last quitted; the figures *on the right* indicate the Section to be next consulted.

*a.* area, *n.* nerve (transverse), *ss.* saw-sheath, *abd.* abdomen, *ant.* antennæ, *mand.* mandible, *clyp.* clypeus, *h.w.* hind-wing (alar characters unless otherwise stated are taken from the fore-wing), *before* = nearer the base, *after* = nearer the apex.

- 1      Discoidal *n.* ends *on the subcosta*—at or before the origin of the cubitus.  
*Ant.* mostly with 9 joints, sometimes fewer, very seldom more. Pronotum always deeply emarginate. (Fam. TENTHREDINIDÆ).....13.
- Discoidal *n.* ends *on the cubitus*—generally much after its origin. *Ant.* generally with about 18 joints or more, the intermediate joints generally very short in comparison with their breadth, and subequal...2.
- 2 (1)    Base of pronotum deeply excised. (Fam. SIRICIDÆ) .....11.
- Base of pronotum slightly emarginate, or truncate. (Fam. LYDIDÆ)...3.
- 3 (2)    Basal three joints of *ant.* longer than all the rest together, and phenomenally thicker! Third joint at least as long as the whole of those following. (Very small insect with delicate glassy and pale-veined wings, and the ♀ with an extremely long *toothless* saw) .....*Xyela*.
- *Ant.* otherwise constructed .....4.
- 4 (3)    *Abd.* broad and flattened above: apex of front tibiæ with *two* spurs...5.
- *Abd.* long and narrow, laterally compressed: front tibiæ with *one* spur...7.





- No intercostal *n.* Radial *a.* simple. Last joint of ♂ *ant.* divided into two subparallel branches (furcate) ..... *Schizoceros*.
- 18 (16) *Ant.* never *setiform* (in all British species, I believe, multiarticulate with short broad joints, and in the ♂ ♂ pectinate throughout). Radial *a.* undivided, sometimes with small appendic, cell at apex (the latter not lying quite upon the margin of the wing) ..... *Lophyrus*.
- Radial *a.* generally\* divided. If not the antennæ are setiform, 9 jointed, with most of the joints elongate. (Pectinate antennæ occur only in *Cladius* ♂ ♂, and they are so only near the base).

This brings us to Konow's last Subfamily, the *Tenthredinini* ...19.

- 19 (18) Radial *a.* undivided.....20.
- Radial *a.* crossed by a *n.* ....35.
- 20 (19) Humeral *a.* contracted .....21.
- Humeral *a.* petiolate .....24.
- 21 (20) The two medial *nn.* strike upon different cubital cells .....22.
- The two medial *nn.* strike upon the same cubital cell ..... *Leptocercus*.
- 22 (21) Three or more (sub-basal) joints of *ant.* branched or "pectinate" in ♂ ; in the ♀ these joints are broad, flattened, and *obliquely* truncated, with spine-like projecting apices ..... *Cladius*.
- Antennæ of ♂ unbranched, their joints in the ♀ ♀ not spinosely produced at apex .....23.
- 23 (22) Third joint of *ant.* curved.† Its base tuberculate in the ♂ and sharply angled in the ♀ (lateral view) ..... *Trichiocampus*.
- Third joint of *ant.* straight ; it is more or less compressed and dilated, but otherwise simple in both sexes ..... *Priophorus*.
- 24 (20) Intercostal *n.* lies *before* the point where the discoidal *n.* strikes the subcosta .....25.
- Intercostal *n.* lies *after* the point above mentioned ..... *Dineura*.
- 25 (24) Clypeus excised at apex (Fig. 7) .....26.
- Clypeus subtruncate .....34.
- 26 (25) Second cubital *n.* absent, making the apparent 2nd cubital cell (really the 2nd + the 3rd!) look extremely long ..... *Cryptocampus*.
- Second cubital *n.* always present (the *first* however may be obliterated !), the second cell never very elongate .....27.
- 27 (26) Claws bifid (Fig. 8).....28.
- Claws with subapical tooth.....33.
- 28 (27) Dorsal apex of ♂ *abd.* with a narrow blunt "awl-like" production: ♀ with slender antennæ, rather filiform than tapering, often with *ss.* (viewed laterally) acuminate at extreme apex, often with stigma pallid at base and a darker apex (mostly small species inhabiting galls)...  
*Pontania*.
- Dorsal apex of ♂ *abd.* produced, if at all, more broadly and triangularly (not awl-like), ♀ antennæ setiform (tapering): stigma never with pale

\* The exceptions are— 1, most Nematodes, and 2, abnormal specimens in all genera.

† The curve in *T. viminalis*, Fall., is so slight that it might be overlooked, but that species may be known from any *Priophorus* by its orange-red abdomen.

- base and dark apex : *ss.* never with its extreme apex sharply acuminate (viewed laterally).....29.
- 29 (28) Hind tibiae and tarsi never noticeably dilated, apex of ♂ *abd.* beneath (= 8th ventral plate), never emarginate, but somewhat triangularly produced in the middle, ♀ *ss.* always normal .....30.
- Hind tibiae and tarsi (except in one genus) evidently more or less dilated. In that genus the ventral apex of ♂ *abd.* is more or less distinctly emarginate, and the ♀ *s.s.* are phenomenally long and broad (viewed from beneath) .....31.
- 30 (29) Mesonotum and pleurae shining, not closely punctured : *ant.* long and slender ; face nearly round ; *ss.* usually rather short and slender...  
*Pteronus.*
- Mesonotum and pleurae duller, more closely punctured : *ant.* shorter and stouter ; face more triangular ; *ss.* stouter (the stigma too is long, and sharply pointed at its apex).....*Amauronematus.*
- 31 (29) Hind tibiae and tarsi paradoxically dilated (almost scutate!) ... *Cræsus.*
- Hind tibiae and tarsi simple ; or if dilated, moderately so only .. ...32.
- 32 (31) Hind tibiae and tarsi evidently though not extravagantly dilated, and the former also sulcate longitudinally .....*Holconeme.*
- Hind tibiae and tarsi simple. The *ss.* (♀) enormous, occupying quite half the ventral side of the *abd.* (must be viewed from below). The 3rd cubital cell usually rather elongate and parallel-sided. The stigma often *dark* at base and *light* at apex. The ♂ 8th ventral plate evidently emarginate at apex .....*Nematus.*
- 33 (27) *Pentagonal area* on head above well defined : antennae setiform and (in the ♂ at least) fairly long. (Species not exceedingly small. Colours various) .....*Pachynematus.*
- *Pentagonal area* not definite. Short filiform antennae. (Extremely small black species, with dark unicolorous stigma and short simple *ss.*)...  
*Micronematus.*
- 34 (25) *Pentagonal a.* fairly definite. ♂ dorsal apex of *abd.* shows a produced (projecting) carina. ♀ *ss.* (seen from above) normal, the lobes which compose it not gaping widely asunder. Claws *always* with subapical tooth .....*Lygaonematus.*
- *Pentagonal a.* indistinct (sculpture of head above altogether shallow and inconspicuous, except that it may be strongly punctured) : ♂ dorsal apex carinated, but the carina not projecting : ♀ *ss.* with divergent hairy lateral lobes, often conspicuous (from above), claws sometimes, though rarely, bifid .. .....*Pristiphora.*
- 35 (19) Both the medial *nn.* strike the same cubital cell (the 2nd). The 1st medial *n.* never runs towards the *apex* of the stigma, but often towards its *base* or a point *before* it. The *genæ* are long, *i. e.*, the eyes are remote from the mandibles.....36.
- Either—the two medial *nn.* strike upon *different* cubital cells : or—the 1st medial *n.* runs towards the *apex* of the stigma : or—the eyes closely approach the mandibles (“*genæ breves*”) .....37.
- 36 (35) Humeral *a.* contracted.....*Hemichroa.*

- Humeral *a.* petiolate ..... *Dineura*.
- 37 (35) Discoidal *n.* and 1st medial *n.* converge strongly, and the humeral *a.* is not petiolate (*Hoplocampides*) ..... 38.
- Either the discoidal *n.* and the 1st medial *n.* are subparallel; or, if they converge, the humeral *a.* is petiolate..... 41.
- 38 (37) Antennæ with 10 joints or more ..... *Phyllotoma*.
- Ant. with 9 joints or less ..... 39.
- 39 (38) Ant. with only 7 joints ..... *Heptamelus*.
- Ant. with 9 joints ..... 40.
- 40 (39) Humeral *a.* with oblique cross *n* ..... *Eriocampoides*.
- Humeral *a.* contracted (N.B. the basal part of the humerus is often very faint, but always present) ..... *Hoplocampa*.
- 41 (37) The 1st medial *n.* runs towards the base of the stigma, the discoidal *n.* strikes the subcosta far before the origin of the cubitus. The genæ are very short, and the two medial *nn.* are both received in the second cubital cell. (Humeral *a.* petiolate) ..... 42.
- The two medial *nn.* are received in different cells ..... 43.
- 42 (41) The radial *n.* the 2nd cubital *n.* and the 2nd medial *n.* are interstitial—forming a practically unbroken line. The humerus in the *h. w.* is normally developed ..... *Mesoneura*.
- The *nn.* mentioned above are not interstitial, and the humerus in *h. w.* is obliterated ..... *Pseudodineura*.
- 43 (41) Humeral *a.* always really petiolate, though in *Kaliosysphinga* it looks rather contracted ..... 44.
- Humeral *a.* not petiolate ..... 55.
- 44 (43) Eyes remote from mandibles. *H. w.* with a medial *n.* present ("enclosed discoidal cell") ..... 45.
- Eyes close to mandibles, or else there is no medial *n.* in *h. w.* ..... 48.
- 45 (44) ♂ *h. w.* has "continuous external neuration" (Fig. 5), ♀ *ss.* (seen laterally) gradually tapers to a point at apex ..... *Periclista*.
- ♂ *h. w.* with normal neuration: ♀ *ss.* (seen laterally) either rounded, or suddenly acuminate at apex ..... 46.
- 46 (45) Genæ about as long as the 2nd joint of *ant.* ..... *Pareophora*.
- Genæ not half as long as the above joint ..... 47.
- 47 (46) Ant. rather short and stout, the 3rd joint considerably longer than the 4th (♀ *ss.* acuminate at apex) ..... *Ardis*.
- Ant. slender, 3rd and 4th joints subequal (♀ *ss.* rounded at apex, viewed laterally) ..... *Rhadinoceraa*.
- 48 (44) 3rd joint of *ant.* plainly shorter than 4th (large black species)...  
..... *Phymatoceros*.
- 3rd joint of *ant.* longer than 4th ..... 49.
- 49 (48) Cubitus bent sharply (almost at a right angle) near its base. 1st cubital *n.* completely wanting ..... 53.
- Cubitus normal. 1st cubital *n.* present, or at least indicated ..... 50.
- 50 (49) Mesothorax with "distinct præsterna" (Fig. 9). *H. w.* in most cases has a medial *n.* ("enclosed discoidal cell") ..... *Tomostethus*.
- Præsterna not defined. *H. w.* without a medial *n.* ..... 51.

- 51 (50) Discoidal *n.* and 1st medial *n.* sub-parallel ..... *Blennocampa*.  
 — The above *nn.* evidently converge ..... 52.
- 52 (51) Head (viewed from in front) raised between the compound eyes, so that  
 the central ocellus is lifted above their tops ..... *Entodecta*.  
 — Head flatter, the central ocellus not lifted above the tops of the eyes, but  
 lying between them ..... *Scolioneura*.
- 53 (49) Humerus (near its base) approaches so closely to the brachius that the  
 humeral *a.* appears contracted ..... *Kaliosysphinga*.  
 — Humerus (near base) vanishes without approaching the brachius ... 54.
- 54 (53) *Ant.* 9- (seldom 10-) jointed ..... *Fenusa*.  
 — *Ant.* 11-jointed (or more) ..... *Fenella*.
- 55 (43) 2nd cubital *n.* wanting, the very long 2nd cubital cell receives both the  
 medial *nn.* Humeral *a.* with oblique cross *n.* (*Dolerides*) ..... 67.  
 — 2nd cubital *n.* present, or else the 2nd cubital cell does not receive both  
 medial *nn.* ..... 56.
- 56 (55) Discoidal *n.* strikes subcosta long before the origin of the cubitus ... 68.  
 — Discoidal *n.* strikes subcosta close to the origin of the cubitus ..... 57.
- 57 (56) 2nd joint of *ant.* shorter than 1st ..... 58.  
 — 2nd joint of *ant.* longer than 1st. (Only two cubital *nn.* present. Hu-  
 meral *a.* with oblique cross *n.*) ..... *Harpiphorus*.
- 58 (57) *Ant.* 9-jointed ..... 59.  
 — *Ant.* with 10 joints or more. Three cubital *nn.* present: humeral *a.* with  
 oblique cross *n.*, a cubital and a medial *n.* present in *h. w.* ..... *Athalia*.
- 59 (58) Humeral *a.* "open" (Fig. 4) ..... 60.  
 — Humeral cell crossed by a *n.* ..... 63.
- 60 (59) Costa much thickened apically, before the stigma: body ovate...  
*Selandria*.  
 — Costa normal: body elongate ..... 61.
- 61 (60) 3rd joint of *ant.* not longer than 4th. ♀ *ss.* (from above) appears tri-  
 dentate ..... *Thrinax*.  
 — 3rd joint of *ant.* longer than 4th ..... 62.
- 62 (61) 2nd joint of *ant.* longer than broad, and much less broad than the 1st  
 joint ..... *Stromboceros*.  
 — 2nd joint of *ant.* very short, and hardly less broad than the 1st...  
*Strongylogaster*.
- 63 (59) Eyes more or less remote from mandibles ..... 64.  
 — Eyes close to base of *mand.* ..... *Eriocampa*.
- 64 (63) Humeral *a.* with short perpendicular *n.* ..... *Strongylogaster*.  
 — Humeral *a.* with oblique *n.* ..... 65.
- 65 (64) *H. w.* with perpendicular areal *n.* (*i. e.*, at right angles to both medius  
 and brachius). *Abd.* above often with large pale lateral spots or  
 streaks. Either two or three cubital *nn.* may occur in the fore-wing.  
*H. w.* most commonly with medial *n.* present and cubital *n.* absent.  
*Pæcilosoma*.  
 — *H. w.* with oblique\* areal *n.* (making an acute angle with the medius and

\* In *Emphytus scrotinus* this character is perhaps scarcely to be recognised. With this exception it seems to be reliable. *Pæcilosoma* and *Emphytus* are undoubtedly very closely allied, though it is usually easy to distinguish them.



- an *obtuse* with the brachius), and generally with neither cubital nor medial *n.* (but sometimes with both!) *Abd.* without large lateral pale markings.....
- 66 (65) Three cubital *nn.* present: claws with subapical tooth: areal *n.* equidistant from discoidal *n.* and 1st medial *n.* ..... *Taxonus.*
- Only two cubital *nn.*: claws bifid: areal *n.* often much nearer to discoidal *n.* than to 1st medial *n.* ..... *Emphytus.*
- 67 (55) Eyes (seen from in front) look shorter and broader, with rather convex than concave inner margins. (The extreme length of each = exactly half the distance from eye to eye\*) ..... *Dolerus.*
- Eyes (seen as above) look more elongate with just perceptibly concave inner margins. (Their length = two-thirds of the distance between them.\*) ..... *Loderus.*
- 68 (56) Eyes (seen from in front) parallel or but slightly converging—the least distance between them clearly greater than the width of the *clyp.*...69.
- Eyes strongly converging—the least distance between them less than the width of the *clyp.*.....73.
- 69 (68) Humeral *a.* contracted. *Ant.* long, very slender, and evenly tapering...72.
- Humeral *a.* with short perpendicular *n.* .....70.
- 70 (69) *Ant.* long, slender, tapering, with 3rd and 4th joints subequal. *Abd.* without tarsal "blotch" or "nuditas" ..... *Tenthredopsis.*
- 3rd joint of *ant.* considerably longer than 4th .....71.
- 71 (70) *Ant.* short, stout, fusiform (each intermediate joint widening from base to apex). The 3rd joint very long as compared with those following. Abdomen broad, its segments above black with narrow whitish-yellow apical margins..... *Sciopteryx.*
- *Ant.* slender and more filiform: the 3rd joint longer than those following, but less so than in *Sciopteryx.* Abdomen more elongate, coloured more or less either with green or with fulvous-red ... *Rhogogastera.*
- 72 (69) Hind-legs abnormally long—when extended the femora reach beyond the apex of the *abd.* ..... *Pachyprotasis.*
- Hind-legs of normal length. ♂ *h. w.* with "continuous external neuratation" ..... *Perineura.*
- 73 (68) Hind-legs elongate, much as in *Pachyprotasis.* Humeral *a.* either shortly contracted or with short perpendicular *n.* ..... *Macrophya.*
- Hind-legs of normal length .....74.
- 74 (73) Antennæ sub-fusiform, much as in *Sciopteryx.* Head (viewed from above) with *slight* projections and incisions in the neighbourhood of the *ant.* (Fig. 6a)\* ..... *Allantus.*
- Antennæ more slender and evenly tapered. Head (viewed from above) with strong (angulated) projections and incisions in the neighbourhood of the *ant.* (Fig. 6b)\* ..... *Tenthredo.*

\* The above are the precise measurements that I find to exist in *D. gonager* and *L. vestigialis* compared under the microscope (with micrometer, &c.) They are probably approximately correct in other cases.

\* The head of *Allantus* (*Tenthredo*, olim.) *maculatus* is to some extent transitional between these two forms, but its general structure and facies make it inseparable from *Allantus*.

FURTHER NOTES ON *LEPIDOPTERA* OBSERVED AT MORTEHOE,  
NORTH DEVON.

BY G. B. LONGSTAFF, M.D., F.R.C.P.

[See *Ent. Mo. Mag.*, 2nd Series, Vol. xiii, p. 19.]

The year 1902 has added many species to my list since I got a few days' collecting with Dr. Dixey at the end of March and beginning of April, and spent practically the whole of July there. During the latter month I had the advantage of the co-operation of the Rev. C. Chichester and (for one day) of Mr. E. F. Studd. The strong east winds made visits to the shallows very depressing, and almost fruitless. I did not sugar.

Species previously recorded are only alluded to where the previous account requires modification or amplification; those recorded for the first time are marked with an asterisk.

CARADRININA.

*Tyria jacobææ*, single specimens seen on the wing both by Mr. Chichester and myself.

*Arctia villica*, larvæ in the spring. Mrs. Longstaff saw a moth on the wing in my hay field in July.

\**Polia lithorhiza*, two on tree trunks.

*Leucania littoralis*, Mr. Chichester took several at privet bloom.—\**L. comma*, one at flowers of *Centranthus ruber*. I am under the impression that a specimen occurred also some years ago at the same flowers, but was in very bad condition.

*Panolis piniperda*, a second specimen turned up in the same plantation.

*Melaenchra serena*, Mr. Chichester took one at rest.—*M. dentina*, two at flowers of *Centranthus*.

\**Agrotis corticea*, at *Centranthus* flowers.—\**A. putris*, at *Centranthus* flowers.

\**Triphæna rubricosa*, one at shallows.

[\**Caradrina umbra* (*marginata*), Mr. Chichester took two at privet bloom.]

*Hadena lucipara*, one at *Centranthus*.—*H. literosa*, a specimen seen in the afternoon on ragwort flowers.

*Metachrostis perla*, Mr. Chichester found this commonly on rocks.—*M. muralis* (*glandifera*), Mr. Chichester found this with the preceding, but not so commonly. I found one on a wall.

*Plusia gamma* was more than usually abundant.

NOTODONTINA.

\**Trichopteryx carpinata* (*lobulata*), two on tree trunks.

*Gymnoscelis pumilata*, one imago beaten out of a hedge.

*Tephraclystis subfulvata*, one imago beaten out of a hedge.—\**T. jasionæata*, stimulated by Mr. Barrett, I secured a good number of larvæ by collecting the heads of *Jasione montana*, and turning them over daily. They are fairly common at Exford in Somerset, but a few were found at Morteheo. The larva is abundantly

distinct both in shape and habits from that of *T. castigata*, which latter abounds at Mortehoe.—*T. isogrammaria* (*Haworthiata*), one imago.

\**Eucymatoge subnotata*, two moths. Dr. Ridg had found larvæ in the neighbouring parish of Braunton.

*Ptenomyia galiata*, several.

\**Hydriomena fulvata*, two or three.—*H. unangulata*, rather common.—

\**H. alchemillata*.—*H. affinitata*, several.—*H. decolorata*, rather common among *Lychnis diurna*.

*Eois aversata*, one.

[\**Leptomeris imitaria*. Mr. Chichester took one.]

\**Nemoria strigata* (*thymiaria*), one.

\**Pseudopteryx pruinata* (*cytisaria*), two.

\**Selidosema gemmaria* (*rhomboidaria*).

\**Abraaxas adustata*, one.

*Deilinia pusaria*, two.

[\**Ourapteryx sambucaria*, Mr. Chichester.]

*Metrocampe margaritaria*, Mr. Chichester took one "nothing" close to my house.

[*Sphinx convolvuli*, this was not seen, although looked for.]

#### PAPILIONINA.

*Argynnis Aglaia* and *Vanessa Io*, were both decidedly common, but the same could not be said of either *V. urticae*, *V. Atalanta*, or *V. cardui*; as regards the last, hibernated specimens were commoner than fresh.

*Epinephele Hyperanthus*, in one spot quite abundant, far commoner than I had ever seen anywhere before.

\**Lycæna Egon*, a single specimen netted on a bank near the sea; I have found *Ornithopus perpusillus* growing not far off, but as this plant is small—as its name implies—and very hard to see, it may well be much commoner than one thinks. I presume the butterfly had hitherto been overlooked among the many *I. Icarus* and *C. Astrarche*.

#### PYRALIDINA.

\**Homæosoma sinuella*, this obscure and local species was obtained in profusion by sweeping, but it appeared to be confined to a very limited area.

\**Eurhodope advenella*, one.

\**Crambus pascuellus*, not common.—\**C. pratellus*, not common.—\**C. hortuellus*, abundant.—*C. pinellus* (*pinetellus*), one,—\**C. pertellus*, one.—\**C. inquinatellus*, one.

\**Stenia punctalis*, \**Eurrhypara urticata*, \**Phlyctœnia crocealis* and \**Loxostege verticalis* (*cinetalis*), of each of these *Pyrales* a single specimen was met with.

\**Pyrausta cingulata*, sweeping produced two specimens of this beautiful insect which would otherwise have probably escaped observation.—\**P. olivalis*, abundant.

\**Scoparia frequentella* (*phæoleuca*, ? *mercurella*), until last summer I had only come across worn specimens of this species which I had erroneously attributed to *S. murana* (noted by Dr. Ridg, but which I have not yet turned up).—

\**S. dubitalis*, *pyralella*, *ingratella*, one.—*S. cembrae*, this occurred again but is not common.

## TORTRICINA.

- \**Eucosma variegana* (*cynosbatella*), abundant.—\**E. pruniana*, common.—  
 \**E. urticae*, rather common.  
 \**Enarmonia cruciana* (*angustana*), a solitary example beaten out of sallow.  
 [\**Notocelia roborana*, E. F. Studd.]—*N. tetragonana*, one.  
 \**Epiblema Scopoliana* (*Hohenwarthiana*, *parvilana*), rather common.  
 \**Hemimene Petiverella*, several [*H. questionana* (*alpinana*), E. F. Studd.]  
 \**Lipoptylcha plumbana* (*ulicana*), one.  
 \**Epinotia aurana* (*mediana*), common on flowers of *Heracleum* in the sunshine.  
 \**Cacœcia Podana* (*pyrastrana*, *fulvana*), several.—\**C. rosana*, common.  
 \**Tortrix Bergmanniana*, several.—\**T. Conwayana*, seen before at Brampton.  
 —\**T. Læflingiana*.—\**T. viridana*, common, but very different in numbers from the London district.

*Euxanthia straminea*, abundant.—*E. alternana* (*gigantana*) should be struck out, as the specimens so named turn out to have been *straminea*.

## TINEINA.

\**Ægeria crabroniformis* (*hembeciformis*), fine freshly emerged specimens of both sexes were found commonly on the trunks of *Populus nigra*. The first specimen seen actually deceived the writer, who knocked it down and put his foot on it under the impression that he was destroying a hornet. So much for mimicry!

- \**Anacampsis tœniolella* (*Sircomella*), one.  
 [\**Gelechia senectella*, abundant at Woolacome, E. F. Studd.]  
 \**Gelechia marmorea*.  
 \**Carcina quereana*.  
 \**Chimabache fugella*, common on tree trunks.  
 \**Argyresthia pygmæella*.  
 \**Tineola biselliella*, one.

As might have been expected, the additions to common July species were numerous, they would have been more plentiful but for the fact that none of my entomological comrades, save Mr. Studd (and he was only at Mortehoe for one day), pay much attention to the smaller things.

Twitcheu, Mortehoe: 13th June, 1903.

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ON THE SYNONYMY OF *CANDALIDES HYACINTHINA* AND  
*C. ERINUS*.

BY HAMILTON H. DRUCE, F.Z.S.

Mr. G. A. Waterhouse has lately written me from Sydney stating that he does not agree with me in sinking *Candalides hyacinthina*, Semper, as a synonym of *C. erinus*, Fab. (P. Z. S., 1902, vol. ii, p. 120). The type of *C. erinus* is in the Banksian Cabinet in the British Museum, and although it is in bad condition, it clearly belongs to the

small form with the whitish under-side, which has since been re-described as *C. subpallidus* by Dr. Lucas, thus showing that Herr Semper was perfectly right in his identification—Mus. Godeff. Lep., xiv, p. 163 (1878).

The mistake has arisen by my having compared Herr Semper's type of *C. hyacinthina* with specimens in the British Museum Collection, which were labelled *C. erinus*, Fab.

Mr. Heron agrees with me that the above synonymy is correct.

London: June, 1903.

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CHAMAESYRPHUS LUSITANICUS, MIK: A NEW BRITISH  
SYRPHID FLY.

BY D. SHARP, M.A., M.B., F.R.S.

The discovery of this species in Britain is very unexpected. The individual has been for some time in Mr. G. H. Verrall's hands, who will doubtless in due course have something to say about it. Though he tells me the specimen does not quite agree with the cotypes of *C. lusitanicus* in his possession, I feel pretty well convinced that the British insect will prove to be a variety—at most—of the Portuguese insect. The discovery in Britain of a species that is known only from Cintra in Portugal, is so remarkable that it is worth while to recite the little that is known about the species.

When Colonel Yerbury was in Portugal in 1896, he secured at Cintra specimens of a *Chamaesyrrphus* rather similar to *C. scævoides*. They were sent to the late Professor Mik, who described them as *C. lusitanicus*. He retained some of the specimens, and the others were given by Colonel Yerbury to Mr. Verrall. This is all that is known of *C. lusitanicus* at present outside the British islands.

When Mr. Jenkinson was at Boat o' Garten in July last, on the 30th of that month Miss Annie Allard (now Mrs. Ward), working assiduously on a vile day, captured there a Syrphid which her acute entomological intelligence recognised as something unusual, and which, while it was still alive, she gave to Mr. Jenkinson, by whom it was mounted and labelled at the time. He recognised it as a *Chamaesyrrphus*, and presented it to the University. On placing it in the collection I saw that it offered some differences from *C. scævoides*, and after comparison with Mik's description I entertain little doubt that it falls into the category of his species.

The authenticity of this Scotch example is therefore unimpeach-



able. We have received at the Museum many specimens of *Syrphidæ* from Colonel Yerbury, among them *C. scævoides*; but it is perfectly certain that this *Chamaesyrphus* did not come with them.\*

The fact that a species of *Diptera* should occur at Cintra and in Inverness-shire, without occurring in any intermediate locality, must appear very anomalous. But it must be recollected that *Chamaesyrphus* is a genus rarely met with. Our other species, *C. scævoides*, has only been added to our list in the appendix to the eighth volume of Mr. Verrall's British flies, on the evidence of specimens found by Colonel Yerbury in Sutherlandshire. *Pelecocera tricineta*, the only other allied form, is also very rare at present. And there can be little doubt that many of the vagaries of distribution of insects are apparent rather than real. Our knowledge does not adequately represent the facts.

There can be but little difficulty in recognising *C. lusitanicus*. It has the peculiar large lamella-like third joint to the antenna of *Pelecocera tricineta*, but differs from it by the insertion of the arista, which is not terminal, as it is in *tricineta*. In *C. scævoides* the insertion of the arista is almost on the middle of the upper margin of the third joint. In *C. lusitanicus* it is nearer to the tip than to the base. Mr. Verrall (British Flies, viii, p. 680) has already called attention to the fact that *C. lusitanicus* somewhat invalidates the value of the genus *Chamaesyrphus*. I think he might have gone further with advantage and placed all the species in *Pelecocera*.

Cambridge: June, 1903.

#### *TETROPIUM FUSCUM*, FABR.:

#### A GENUS AND SPECIES OF LONGICORN COLEOPTERA NEW TO BRITAIN.

BY D. SHARP, M.A., M.B., F.R.S.

On June 26th last, while going from Brockenhurst to Denny, I captured a specimen of *Asemum striatum* var. *agreste*. Shortly afterwards my daughter, M. A. Sharp, swept up a specimen of a Longicorn I supposed to be new to us. A description forwarded to the British Museum produced a reply from Mr. C. J. Gahan to the effect that the species was probably *Tetropium fuscum*, Fabr. On returning to Cambridge I find Mr. Gahan's conjecture to be quite correct. *Tetropium fuscum* somewhat resembles the smaller individuals of *Asemum*, but the thorax is not transverse, and the eyes are entirely divided, each one consisting of two separate parts. There can thus be no difficulty in recognising this insect.

\* I feel that I can scarcely pass over this opportunity of publicly acknowledging the great assistance Colonel Yerbury has given us at Cambridge in the formation of our collection of British *Diptera*, and of thanking him for it.

*T. fuscum* is no doubt attached to the Scotch fir. Some of these trees, planted in the New Forest a good many years, have flourished perfectly, and there are now some fine specimens amongst them. They are already in possession of a considerable fauna, and I feel no doubt that this will gradually increase.

*T. fuscum* is, I believe, a rare species on the Continent; indeed, the only specimen in my own collection is a Swedish example from the collection of Comte Dejean. I should be very glad to receive information as to its habits, for I can myself find but little; and we have not yet been successful in obtaining another example of *T. fuscum*.

*Tetropium luridum*, the better known of the two European species of the genus, is a common insect in the Alps, frequenting the stacks of fir-wood piled in the forests to be removed as fuel for the winter. I have met with it in elevated forests in the Alps on several occasions. If my memory can be trusted, it is not the Scotch fir but a quite different conifer that shelters it.

Cambridge: July 14th, 1903.

*Notes on Eupithecia*.—When I was engaged last year in working up the life histories of the *Eupithecia*, Dr. Longstaff most kindly put himself to much trouble to furnish me with larvæ of the obscure western species—*E. jasioncæta*, and to provide food so long as it was required. A description of this larva has already been published, and I need say little more about it, except perhaps again to draw attention to the curious way in which it conceals itself in the flower head of *Jasione montana* by eating out a hollow space among the pedicels of the flowerets, in which space or cave it lies securely doubled together, leaving little or no outward sign of its presence.

Now—in June—the moths are emerging, possibly rather forced forward by indoor warmth, and I cannot help being struck by their retiring disposition, and great desire to avoid the light of day. On two occasions, on the boxes containing the pupæ being opened, a moth instead of allowing itself to be boxed or bottled, has cleverly managed to slip by and to fly behind me, making instantly for the darkest corner of the room, where, among books on the crowded shelves, it has contrived to conceal itself so closely that it could not be discovered. Naturally, I expected it to come out and show itself at dusk, or after dark, and the greatest source of anxiety was as to whether it would immolate itself in the gas flame. But, no!, no such misfortune happened, nor did the moth in either case show itself at all on the first night, but after remaining concealed another day, each specimen appeared safely and in perfect condition, upon the window, on the *second* night after its escape. This circumstance, though happening to separate moths on different occasions, would hardly be worthy of note, but that it, as I think, throws light upon the habits of certain species of the *Eupithecia*; the determined retreat of these specimens into the darkest corners being scarcely what is to be expected of

*Geometra* in general. It helps to explain, what otherwise is perplexing, why it is that several of our *Eupithecia* are scarcely known by captured specimens, those to be seen in collections—often extending to long series—being such as have been reared from the easily collected larvæ. This is the case even in the bright and pretty *E. linariata*, which surely ought to be readily captured at dusk flying over the beds of *Linaria vulgaris*, as is its close ally *E. pulchellata* over the foxglove; or might be expected to sit by day on posts or rails, or to allow itself to be disturbed from undergrowth. So far as my knowledge goes, however, all our specimens are obtained by the easy process of bringing home a bunch of the flowers of the yellow toadflax. In the same manner our series of *E. albipunctata*, *E. pimpinellata* and *E. trisignata* consist almost wholly of specimens reared from larvæ found on their favourite *Umbellifera*; of *E. valerianata* in the same manner from the flowers of *Valerian*; of *E. campanulata* from those of *Campanula*; and of *E. virgaureata* from those of various *Compositæ*. I am free to admit that it is sometimes difficult, in the case of captured and worn specimens, to say to what species they may belong, but I am strongly of opinion that these species are rarely seen in the perfect state in any condition, good or bad, and that this arises from their avoidance of light, so that they hide themselves among thick herbage during the day and till it is so late at night that there is great difficulty in seeing or securing them. Apparently, *E. jasionata* is of similar habits. It is worthy of remark that these are not in any case the species which come so often and so readily to artificial light. It is quite possible that this peculiar habit may stand in the way of our acquiring full knowledge of some of the habits of these species. For instance, in the case of *E. campanulata*, I noticed last summer at Ewelme (in a chalk district), that Canon Cruttwell has *Campanula trachelium* growing wild in the shubbery close to the garden, and has happened to secure one or two specimens of the moth on the wing, besides finding the larva. These caught specimens are nearly one line larger in expanse of wings than reared specimens, and give the idea of a much larger species—so much that their identity was for the moment doubtful—and a suggestion is furnished that our reared specimens may as a rule be quite under the natural size!—CHAS. G. BARRETT, Tremont, Peckham Rye, S.E.: June, 1903.

*Melanism in Tephrosia consonaria*, Hüb.—I have just seen, in the collection of my old friend Mr. S. J. Capper, at Huyton Park, Liverpool, evidence of a further advance than I have yet known in the direction of that melanism in *Geometridæ* for which this country is—or ought to be—becoming so famous. This evidence consists in two specimens of *Tephrosia consonaria*, of a beautiful bright black colour, with slightly paler subterminal lines, and a conspicuous white spot, round at one end, pointed at the other, in the discal cell. This spot is remarkable, since there is no indication of its existence in typical specimens, nor any apparent reason why it also should not be black, yet it is most welcome, since it serves to distinguish these specimens, at a glance, from the blackish forms of *T. biundulata*.

A singular circumstance is, that this new variation does not seem to originate in the usual region of incipient melanism, the south-west Riding of Yorkshire, but from Kent, where, as I am informed, several specimens have been taken and reared. It is perhaps needless to remark that no more definite locality has been furnished.—ID.: July 8th, 1903.

*Habits of Dianthæcia*.—Mr. Barrett's remarks on a habit of *Dianthæcia conspersa* remind me of the first time I met with this pretty species in the perfect state. In July, 1873, just thirty years ago, the late Mr. Bond walked with me from Whittlesford in Cambridgeshire, where I was then living, to the neighbouring parish of Sawston to look for *Lycaena Acis*, where we had taken it years before. After an unsuccessful search for the butterfly we turned our attention to the moths, taking such species as *Sesia ichneumoniformis*, *Toxocampa pastinum*, &c., on the ground where *Acis* used to occur, and then turned to go back to Whittlesford; searching a fence near the large paper mills we found a fine fresh *conspersa* on the top rail, quite five feet from the ground, and a few yards further along another also on the top rail. As Mr. Bond made no remark I conclude that he had met with the moth in similar situations before. With regard to other members of this genus I have only met with two species at rest, viz., *D. carpophaga* and *cucubali*, three of the former in the large gravel pit near Whittlesford Station amongst the loose gravel well concealed by the rough grass, their pale ochreous-brown colour matching the gravel on which they rested. Of *cucubali* I met with a single specimen at rest at Babraham (Cambs.) the same year (1875) at the base of a poplar trunk well concealed by the tall grass.—A. THURNALL, Thornton Heath: July 6th, 1903.

*Triphæna pronuba* caught by a Flycatcher.—On the evening of June 23rd last, at about 8.30 p.m., Mrs. Richardson saw a flycatcher (*Muscicapa grisola*) make a short flight from a sundial and return to it with a good sized moth, which, in a few seconds, escaped. The bird went after it and caught it again, and after it had got rid of its wings, which it did by jerking it about and hitting it against the stone of the sundial, much in the way in which a thrush breaks up a snail, it ate it. Going up to the sundial we found on the grass below a fore and hind-wing of *Triphæna pronuba*. Probably the other wings were there, but it was getting rather dark to see them. To witness such an exhibition is somewhat unusual, and I thought it might be worth recording. Had the wings merely been seen in the morning the destruction of the moth would certainly have been credited to a bat.—NELSON M. RICHARDSON, Montevideo, near Weymouth: July 9th, 1903.

*Trichoptera and Odonata in West Cornwall in 1903*.—During another, only too short, visit to Cornwall this year, I have been able to add slightly to my former lists of *Trichoptera*. *Limnophilus luridus*, Curt., occurred near Trewoofe. *Silo pallipes*, F., at Lamorna Cove and Newlyn (West), *Crunæcia irrorata* at Newlyn and Mawgan-in-Pydes. *Beræa pullata*, Curt., at Newquay. *Rhyacophila dorsalis*, Curt., above Gulval, and *Diplectronea felix*, McL., near Newlyn. This latter seemed to be confined to a half-dried-up water-fall about 6ft. square surrounded by ivy. I also took five species of *Odonata*, viz., *Pyrrhosoma nymphula*, Sulz., *Agrion puella*, L., and *Ischnura elegans*, V. d. L., and *Calopteryx virgo*, L., which seemed widely distributed; and in addition I had the pleasure of securing a specimen of *Sympetrum Fonscolombii*, Selys, about mid-day on June 4th. I took it in a swamp about half-a-mile west of a little village called Sheffield on the road to Trewoofe.—W. C. BOYD, Waltham Cross: July 3rd, 1903.

*Sympetrum Fonscolombii*, Selys, in the Land's End District.—The capture by my old friend Mr. W. C. Boyd, of a ♀ *S. Fonscolombii* on the 4th of June in this



year, near Trewoofe, in West Cornwall, is worthy of a more prominent record than mere allusion in a local list. It is presumably the second female example of the species caught in Britain (exact data as to the other specimen of that sex are wanting). All captures of the species in Britain, with one notable exception, have been in solitary examples, and Mr. Boyd on this occasion saw no others. The notable exception alluded to was the capture by the Messrs. Briggs of seventeen males (with no female) in Surrey, in June, 1892. There is not the slightest evidence to support the idea that the species ever breeds in this country: everything points the other way. It is essentially meridional in distribution, and yet the examples taken here with any date records have been taken in June, and were fully mature. Mr. Boyd's ♀ is no exception, for the under-side of the abdomen shows the whitish pulverulence that is a sure sign of what may be called "old age." Mr. Boyd's capture rests on a somewhat different footing to the Surrey swarm noticed by Messrs. Briggs. It is a long way from the Land's End to the nearest French coast, therefore it is not improbable that this example may have had the advantage of a "lift" on some vessel; but of course this is mere conjecture. In a genus in which the specific characters are somewhat subtle, it is not unnatural that the species should be sometimes confounded with *S. striolatum*, and it is well that all very early captures supposed to be of the latter be carefully examined. The published English descriptions of *S. Fonsecolombii* need comparative details, no doubt owing to lack of materials. I may return to this subject, but at present conclude these notes by thanking Mr. Boyd for enabling me to add a British-caught ♀ to my collection, accompanied by the remark:—"I knew I should get something good for you some day."—R. McLACHLAN, Lewisham, London: July 3rd, 1903.

*Agriion hastulatum*, Charp., at Aviemore.—For some time I had been looking forward to an opportunity for visiting this locality with a view of taking *Agriion hastulatum*, a dragon-fly introduced into the British list on the strength of a specimen captured by Col. Yerbury at Aviemore (cf. Ent. Mo. Mag., viii [2], p. 226, Oct., 1900). I am pleased to be able to report that I have taken typical specimens of the species at intervals from June 22nd of this year; so far I have not been able to take many on account of the high winds, but should the weather improve I have no doubt that a fair number may reward my labours.—JAMES J. F. X. KING, Aviemore: July 16th, 1903.

*Gynandrophthalma affinis*, Hellw., in Wychwood Forest.—The greater part of June this year was very dismal, torrents of rain falling almost daily, so that collecting was out of the question. Towards the end of the month, however, the weather suddenly changed, bringing brilliant sunshine and heat, and I started off at once to Wychwood Forest to look for *Gynandrophthalma affinis*. A day or two spent there showed that the species is not at all uncommon in the Forest, although it needed a good deal of sweeping, beating and searching to take them. In their habits they are much like *Cryptocephalus*, but they more readily take wing in the hot sunshine. The number of dead bodies lying about seemed to indicate that the incessant heavy rains had made havoc among them.

In the same locality *Psylliodes dulcamarae*, Koeh., was common on its food-plant. *Cryptocephalus ochrostoma*, Har., was fairly common, and *Harpalus punctatulus*,



Duft., *H. ruficola*, Sturm, and *Licinus depressus* occurred under stones. The majority of my captures are, however, as yet unset and undetermined.—W. HOLLAND, University Museum, Oxford; July, 1903.

*Perileptus areolatus*, Creutz, in Shropshire.—Whilst collecting in the Welsh corner of North Shropshire, where the river Ceiriog forms the boundary between that county and Denbighshire, I obtained half a dozen specimens of *Perileptus areolatus*, Creutz. The specimens occurred amongst shingle on the Shropshire bank of the Ceiriog, in a spot a little east of Offa's Dyke, and about four miles above the point where the Ceiriog joins the Dee. They were very difficult to secure, owing to their rapid movements. The dates of capture were as follows:—May 29th, 1898 (one specimen); June 23rd, 1898 (one specimen); July 9th, 1899 (four specimens).

The history of the records of the occurrence of this species in the British Isles is, so far as I can ascertain, as follows:—Stephens, in his "Illustrations," 1827, says, "taken on Duddon Sands near Broughton, Lancashire, but difficult to secure on account of the wind.—J. C. Dale, Esq." In Stephens' "Manual," 1839, Duddon Sands near Broughton is still the only locality given.

Dawson, in "Geodephaga Britannica," 1854, says, "rare, Duddon Sands near Broughton in Furness, Lancashire, and at the confluence of the Conway and Llugwy in North Wales." In the "Entomologist's Weekly Intelligencer," August 1st, 1857, there is an unsigned article on *Coleoptera* in the neighbourhood of Llangollen, and after a mention of the various Bembids to be met with in the shingle at the edges of the river Dee, it goes on to say, "It was in a similar locality, at Bettws-y-Coed (further to the west), that Mr. Wollaston captured several specimens of the rare *Blemus areolatus*; and it is possible, therefore, that this would, if searched for, be taken also in the valley of the Dee. The late Mr. Joseph Chappell was probably the first to capture the species at Llangollen, though I do not think he published a record. Dr. J. W. Ellis and Mr. R. Wilding took the species in the same locality on May 21st, 1888, and Mr. W. E. Sharp has subsequently taken it there. In Fowler's "British *Coleoptera*," vol. i, 1887, the following localities are given:—"Dudden Sands, near Broughton-in-Furness, Lancashire; Conway (confluence of the Conway and Llugwy), North Wales (Brewer, &c.); Scotland, very local, riparial, Solway district (taken in some numbers by Dr. Sharp)."—J. HAROLD BAILEY, Port Erin, Isle of Man: July 7th, 1903.

*Hydroporus marginatus*, Duft., &c., in Shropshire.—In a small stream running into the river Ceiriog in the same locality mentioned in the preceding note I obtained a total of twenty specimens of *Hydroporus marginatus*, Duft., during visits on the following dates:—May 29th, 1897, May 29th, 1898, June 23rd, 1898, and May 21st, 1899. In the same stream the following species also occurred:—*Brychius elevatus*, Panz., *Deronectes 12-pustulatus*, F., *D. depressus*, F., *Agabus paludosus*, F., *Platambus maculatus*, L., *Henicocerus exsculptus*, Germ., and *Elmis Volkmar*, Panz. Amongst shingle and under stones the following occurred:—*Gnypeta cœrulea*, Sahl. (one specimen), *Leptacinus batycheirus*, Gyll., *Philonthus fulvipes*, F., *Haploderus celatus*, Grav., *Cryptohypnus riparius*, F., *C. 4-guttatus*, Lap., *Elaphrus riparius*, L., *E. cupreus*, Duft., *Bembidium decorum*, Panz., *B. tibiale*, Duft., *B. atrocœruleum*, Steph., *B. punctulatum*, Drap.—ID.

The beetles (1) of Brandon, Suffolk, in June, 1903.—The discovery of a beetle new to Britain inspires a longing to possess indigenous examples thereof in every Coleopterist; hence it was not surprising that Mr. A. J. Chitty, Mr. B. Tomlin and I should foregather at Brandon on June 4th with the fixed intention of extending our knowledge of *Diastictus vulneratus* (cf. Ent. Mo. Mag., 1902, pp. 253-4). For three solid hours that afternoon did three shirt-sleeved men crawl and scratch about the open "Breck" sands to no purpose; nor was this the only visit; but all were vain, as far as this particular insect was concerned. The season was too late or the heath too dry; at all events, the beetle was too elusive.

But, if *Diastictus* was not forthcoming, our exertions were amply rewarded in other directions, for within a hundred yards of the classic spot, at which it had occurred, we succeeded in turning up *Onthophilus sulcatus*,\* which would appear, in spite of what Curtis says regarding its stercorareous proclivities, to be attached to rabbits' burrows, since we all found it at arm's length down their holes; and, in Norfolk, it is recorded from three heath localities. With it were *Alcochara cuniculorum*,\* *Myrmedonia limbata*, *Plagiogonus arenarius*, *Aphodius tristis*,\* *Amara fulva*, *Calathus mollis*, *Homalota cœsula*,\* *Oxyptoda brachyptera*, and, strange to relate, *Acalles ptinoides*. In the adjacent rabbit scratchings we discovered, among many common things, *Orthocerus muticus*, *Cardiophorus asellus*, *Byrrhus murinus*, *Microzoum tibiale*, *Crypticus quisquilius*, and *Helophorus rugosus*; and at the roots of the herbage, *Harpalus picipennis* and *H. anxius* (cf. Ent. Mo. Mag., 1897, p. 9).

A sandy field at Town Street yielded many nice things to careful searching. Here, at the roots of *Senecio jacobæa*, were *Thyamis dorsalis*\* and *gracilis*, *Mantura chrysanthemi*, *Dyschirius politus*, *Bledius opacus*, *Olibrus pygmæus*, *Gymnetron rostellum*, *Ceuthorrhynchus marginatus* and *Tychius tibialis*.\* Beneath *Echium vulgare*, *Homalium cœsum* var. *tricolor* and *Ceuthorrhynchus geographicus* occurred sparingly, with *C. asperifoliarum* and *Meligethes murinus* commonly on the flowers. At the roots of *Silene cucubalus*, *Hister purpurascens*, with its var. *niger*, Er., and *Carcinops minima* were sifted among the sand; and *Harpalus rufibarbis* (generally very rare in Suffolk) and *Amara bifrons* were abundant. A few *Apion fuscirostre* were beaten from broom.

The rough grasses and rushes on the banks of the Little Ouse, near the Staunch, were alive with insect life—more particularly *Culex pipiens* and *Simulium reptans*! We swept from them *Chrysomela graminis*,\* *Silis ruficollis*, *Oodes helopoides*, *Telephorus figuratus*, *Demetrius monostigma*,\* *Hygronoma dimidiata*, *Haltica lythri*, *Gymnetron villosulus*, and *Ceuthorrhynchideus melanarius*. One of our best captures was *Epitrix pubescens*\* swept by Mr. Tomlin (and subsequently in July by Mr. E. A. Elliott and myself), with *Phyllotreta tetrastigma*, from *Solanum dulcamara*. *Orchestes scutellaris* and *O. salicis* occurred on willows. By swilling and searching at the roots of the reeds we discovered *Ochthebius pygmæus*, *Corylophus cassidioides*, *Ocyusa picina*,\* *Trogophlæus bilineatus* and *rivularis*, *Hydræna riparia* and *testacea*, *Elaphrus cupreus*, *Chotarthria seminulum*, *Stenus argus*,\* *melanopus*, *solutus*\* and *binotatus*, while in water rat's dung was *Cercyon hamorrhoum*.

Other captures at Brandon were those of *Trox scaber* in a dead rabbit; *Phyllotribus viridicollis* by sweeping along a sandy hedge; *Malthinus fasciatus*, *Dryophilus*

(1) An asterisk indicates that the species had not been previously noticed in the county.

*pusillus* (both commonly) and one example of *Rhinomacer attelaboides* (cf. Ent. Mo. Mag., 1898, p. 160) by sweeping beneath fir trees.

An excursion to Tuddenham Fen on a cloudy day was a little disappointing in results, but we raked in *Bradycellus placidus*, *Cryptohypnus riparius* and *Cassida vibex* among refuse, *Lema puncticollis* by sweeping, *Cryptorhynchus lapathi* not rarely beaten from old sallows, and *Erirrhinus tortrix* on aspen.

On further examination of the material at home, Mr. Chitty tells me he took *Harpalus discoidens*, *Homalota fusca*, *H. triangulum*, *Heterothops 4-punctula*, *Philonthus nicens*, *Liodes humeralis*,\* *Atomaria fuscipes*, *Aphodius constans*, *Limoniis cylindricus* and *minutus*, *Psylliodes picina*, *Ceuthorrhynchus euphorbiæ*\* and *setosus*. Mr. Tomlin adds *Phlæocharis subtilissima*,\* *Gymnetron collinus*,\* *pascuorum* and *beccabungæ*, *Hypera fasciculata*, *Ceuthorrhynchus resedæ*, *Limnebius nitidus*,\* *Evæsthetus ruficapillus*,\* *Malthodes fibulatus*, *Ceuthorrhynchidius dawsoni*,\* and, in a rabbit hole, the rare *Aphanisticus pusillus*.\*

Mr. Chitty left on the evening of the 8th, and Mr. Tomlin and I early on the 10th morning. Our expedition was a failure as regards its main object, but a distinct success in its general results, especially in that it added 20 species of beetles to my "*Coleoptera* of Suffolk."—CLAUDE MORLEY, Ipswich: July 15th, 1903.

*Harpalus Frölichii*, Sturm.—I took an example of this species in its only British locality early last April, and Mr. Alfred Beaumont found three or four more in the middle of May; it appears to be re-instating itself there (cf. Ent. Mo. Mag., 1898, pp. 84-85, et 1901, p. 64).—ID.

*Bembidium virens*, Gyll., in *Inverness-shire*?—I have recently found in my collection standing apart near *Bembidium prasinum*, a good many specimens of *Bembidium virens*, Gyll. When I placed them in my collection I noticed they agreed with nothing else, but as they are not of a brighter green colour than *prasinum*, even when *virens*, Gyll., was added to the list, it never occurred to me that they could be this insect until I saw Mr. Lloyd's specimens the other day, and remembered that my insects had the 1st joint of the antennæ dark. Gyllenhal, in his "*Insecta suecica*," gives two colours for *virens*, and my specimens are the darker form. The specimens are labelled "Beaully, Inverness," and may come from there; as, however, while at Beaully, I had specimens of insects sent me which I mislaid (see Ent. Mo. Mag., vol. xxxii, p. 141), collected from a Norway river, it is quite possible that the specimens really are some of those from Norway. At the same time there is no reason why the insect should not occur along the banks of the river Beaully as well as on the banks of the Norwegian river, and as it has occurred at Loch Marec, it seems desirable to record the existence of these insects, although further confirmation of the locality is needed. The insect, judging by the price asked for specimens, is apparently not common on the Continent.—A. J. CHITTY, 27, Hereford Square, S.W.: July 8th, 1903.

*Coleoptera at Pamber Forest*.—On May 30th I went to Pamber Forest for a few days' collecting, and to try and take *Labidostomis tridentata* again, the life-history of which beetle I am endeavouring to work out, as nothing is known on the subject. The weather being fine and hot, the insect was taken in numbers on and flying round young birch trees. From these beetles I have obtained many eggs,

which are very curious and interesting. The ♀ lays little bunches of from 5 to 25 eggs on the birch leaves; each egg is covered with a case which the ♀ constructs from her excrement, rolling it round the egg with her hind tarsi. Each egg is connected with the rest and with the leaf by a long thin thread. I was fortunate enough to observe a ♀ ovipositing in nature on the 31st; some of these eggs have only just hatched yesterday, July 7th. The newly hatched larva very much resembles that of *Clythra*. The abdominal segments are bent forward, the legs are long, and the head broad. The body is of a dirty yellowish-white, and the head dark brown. The two-jointed antennæ are short, and the tarsi are represented by a claw. The head is furnished with a few long hairs. The little larva remains inside the egg-case, which it breaks off from the rest, and looks a very curious object walking rapidly along with the case sticking up as if the larva was in a tub turned upside down.

Other beetles taken worth noting are—*Staphytinus fulvipes*, a fine specimen of which was captured running in a ditch. *Lebia chlorocephala* was swept, as were also *Saprinus virescens* and *Mordellistena abdominalis* ♀. Several specimens of *Trachys minuta* were beaten from sallows. *Tanynechus palliatus* occurred on thistles, *Malachius æneus* was not uncommon in flowers. A specimen of *Amphicyllus globus* was swept. Other species I have taken at Pamber are—*Phytæcia cylindrica*, *Centhorrhynchus asperifoliarum* and *campestris*, *Epuræa melina*, *Sibinia potentillæ*, *Brachytarsus varius* and *Balaninus tesellatus* by sweeping and beating. *Dermestes murinus* is very common on carrion, and *Coccinella distincta* occurs with the usual other Myrmecophilous *Coleoptera* in the nests of *Formica rufa*, of which there were very many.—HORACE DONISTHORPE: July, 1903.

*Coleoptera at Newtonmore.*—I had a few days' collecting with my friend Mr. J. E. Black on Speyside, near Newtonmore, from June 15th to 24th. I was only able to stay for a couple of days, both of them miserably cold, and wet at times, but Mr. Black, who remained on for another week, was more fortunate, as the weather improved greatly, with the result that he was able to take several species which we had worked for in vain when I was with him.

I have now had an opportunity of going over the whole of the captures, and as this higher part of the Spey valley has probably not been worked systematically before for *Coleoptera*, I append a complete list of the beetles taken. Practically all the places we worked were above the 1000 foot contour line.

In the *Adephaga* we secured the following:—*Cicindela campestris*, L.; *Elaphrus uliginosus*, F.; *E. riparius*, L.; *Cychrus rostratus*, L.; *Carabus violaceus*, L. (a very fine specimen); *C. arvensis*, Hbst.; *Dyschirius globosus*, Hbst.; *Cymindis naporariorum*, L. (fairly common under stones lying in the heather); *Miscodera arctica*, Pk. (under stones by the side of a sandy stone crossing a grouse moor); *Calathus micropterus*, Duft.; *Pterostichus oblongo-punctatus*, F.; *P. vitreus*, Steph.; *Amara acuminata*, Pk. We only devoted a very short time to the water beetles, so in this family our take was very scanty, and included—*Hydroporus erythrocephalus*, L.; *Agabus Sturmi*, Schön.; *A. bipustulatus*, L.; *Rhantus bistratus*, Berg.; *Dytiscus marginalis*, L.; and *Gyrinus opacus*, Sahl. In the *Staphylinidæ* there were several very interesting captures—*Leptusa analis*, Gyll.; *Megacronus cingulatus*, Man.; *Bolitobius atricapillus*, F.; *Tachinus laticollis*, Gr.;



*Quedius nigriceps*, Kr.; *Q. semicæneus*, Steph.; *Q. boops*, Gr.; *Staphylinus pubescens*, De G.; *S. erythropterus*, L.; *Ocyopus brunnipes*, F.; *Anthophagus testaceus*, Gr.; *Lesteva muscorum*, Duv.; *Lathrinæum unicolor*, Steph.; *Acrulia inflata*, Gyll. (only two specimens of this rarity were secured).

In the Clavicorns we got *Agathidium atrum*, Pk.; *A. nigripenne*, F.; *A. lævigatum*, Er.; *Liodes humeralis*, F.; *L. glabra*, Kug.; *L. castanea*, Hbst.; *Saprinus nitidulus*, Pk.; *Ips quadripustulatus*, F.; *Rhizophagus ferrugineus*, Pk.; *R. depressus*, F.; *R. dispar*, Pk.; *Halysia 16-guttata*, L.; *H. 14-guttata*, L.; *Mysia oblongoguttata*, L.; *Elmis Tolkmari*, Pz.; *Parnus prolifericornis*, F. In dung, *Aphodius lapponum*, Gyll.; *A. depressus*, Kug.; and *A. putridus*, Cr.; were taken, and in sandy places *Egialia sabuleti*, Pk.

The following were secured mainly by beating the tops of felled Scots firs, birches, and mountain ashes, and by sweeping (though on the whole this method of collecting was singularly unproductive), and by searching the stumps of newly felled fir trees, *Althous vittatus*, F.; *Corymbites cupreus* v. *aruginosus*, Germ.; *C. quercus*, Gyll.; *C. impressus*, F.; *Campylus linearis*, L.; *Telephorus alpinus*, Pk.; *T. nigricans* v. *discoideus*, Steph.; *T. pellucidus*, F.; *T. paludosus*, Fall.; *T. obscurus*, L.; *Rhagonycha elongata*, Fall.; *Priobium castaneum*, F.; *Eros aurora*, F. (one under the bark of a fir stump); *Rhagium indagator*, L.; *R. bifasciatum*, F.; *Asemum striatum*, L.; *Chrysomela fastuosa*, L.; *C. varians*, F.; *C. marginata*, L. (the last two were found, the first crawling on a path, the second dead in a sandy spot, near the Spey); *Donacia discolor*, Pz.; *Haltica pusilla*, Duft.; *Clerus formicarius*, L.; *Helodes marginata*, F.; *Anthonomus conspersus*, Desb.; *Deporaus megacephalus*, Germ.; *Rhinomacer attelaboides*, F.; *Magdalinus phlegmaticus*, Hbst. (this insect was very common on the fir tops, and varied extraordinarily in size); *Phyllobius maculicornis* v. *cinereus*, Fowl.; *P. pomonæ* v. *cinereipennis*, Gyll.; *Dorytomus tortrix*, L.; *Pissodes pini*, L.; and *Hylobius abietis*, L., in great profusion.

*Otiorrhynchus blandus*, Gyll., was common, and *Barynotus Schönerherri*, Zett., was rare under stones, and in shingle by the side of the river Truim *Cryptohypnus dermestoides*, Hbst., and the v. *quadriguttatus*, Lep., turned up commonly with another species of the genus, about which I shall have something to say in another article.—T. HUDSON BEARE, 10, Regent Terrace, Edinburgh: *July*, 1903.

*Pachyta sexmaculata* at Aviemore.—While walking over from the Station this afternoon in the hot sunshine, about four o'clock, the pretty little longicorn *Pachyta sexmaculata* flew past me and settled upon a paling just in front of me; I need not say but little time elapsed before it was in my death-bottle. I took this specimen not more than four miles distance from the place where my mother captured the original specimen recorded by Mr. G. C. Champion.—JAMES J. F. X. KING, Aviemore: *July 4th*, 1903.

*Asemum striatum* in Dorsetshire.—On May 25th last I captured, flying in the High Street of Wareham, Dorset, a specimen of *Asemum striatum*. This is the fourth or fifth example that has occurred in the Southern counties. I recorded one which I took in Lord's Wood, near Southampton, in 1894, in the "Entomologist" for that year; since then two or three have been met with in the New Forest, but I am not aware that it has been found further west before. Therefore, the range



of this Scotch and North of England species seems extending. Though in this country *Asemum striatum* is usually confined to the North, yet it occurs in France, and most countries in Europe as far as the Apennines and the Caucasus. I have not seen any record of it from our Midland Counties.—H. S. GORHAM, Shirley Warren: June 19th, 1903.

## Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, May 28th, 1903.—Mr. E. STEP, F.L.S., President, in the Chair.

Mr. Lister, of Easry, Kent, was elected a Member.

Dr. Chapman exhibited a ♀ of *Euchloë euphenoides* measuring 48 mm. in expanse, from Cannes, 30–42 being the usual range. Mr. Turner, living larvæ and cases of the following species of the genus *Coleophora*, and gave notes on their habits and occurrence:—*C. artemisiella*, *C. maritima*, *C. nigricella*, *C. anatipennella*, *C. bicolorella*, *C. ibipennella*, and *C. hemerobiella*; he had found a larva of *C. nigricella* on *Smyrnium olusatrum* at Benfleet; at the last named place he had found a solitary larva of *Phorodesma smaragdaria*, and thought that the species would probably be exterminated by the destruction of its food-plant in the extensive repairing of the sea walls. Mr. Goulton, an example of *Phytodecta viminalis* from Rammore; it was stated to be common at Oxshott. Mr. West, photographs taken during the Society's Field Meeting at Box Hill. Mr. Step, photographs of *Eupithecia exiguata* and *Melanippe fluctuata*, showing their resting positions on palings, taken at the same Meeting; Dr. Chapman noted that the latter species usually had its head close to the next paling and the body nearly horizontal.\* Mr. Step read the Report of the Field Meeting at Box Hill on May 16th, 1903.

June 11th, 1903.—The President in the Chair.

Mr. Turner exhibited (1) *Anisopteryx æscularia*, a dark form from Lewisham and a light one from Dorking; (2) a dark suffused specimen of *Hybernia marginaria* from Dorking; (3) a series of *Dasycera sulphurella* bred from rotting wood at Loughton, and pointed out the secondary sexual characters, the males being much the less developed in that respect. Dr. Chapman, (1) a larva of *Thestor ballus* bred from an ovum sent by Mr. H. Powell of Hyères, and pointed out the characters of the species, and its intermediate nature between the genera *Lycæna*, *Thecla* and *Chrysophanus*; (2) *Orina (Chrysochloa) tristis* var. *smaragdina*, bred from the egg at Reigate (from ova found near Lake Maggiore), the larva had been at large since last September, and the imago had just been found. Mr. Garrett, a fine series of *Triphæna fimbria* bred from Wimbledon Common, including among other forms the pale grey type, var. *rufa*, var. *brunnea*, and var. *solani*. Mr. MacArthur, bred series of *Eupithecia venosata* from the Shetland Isles, the Southern Cunningsburgh examples were much darker and larger than those from Unst in the extreme north; the larvæ were always on *Silene inflata*. Mr. West (Greenwich), the rare *Neorophorus vestigator* from a dead rook, and *Harpalus servus* under stones, together with *Gnathoconus picipes*, all taken at Yarmouth in May. Mr. Carr, ova of *Hylophila prasina*; Dr. Chapman noticed a great resemblance between this species and the *Acronyctæ*, but only in the ova. Mr. Sieh, larvæ of *Teniocampa miniosa* from Brentwood. Mr. Lucas, beautifully coloured drawings of *Ephyra pentadactyla* var. *subroseata*, the local Staffordshire form (see Ent., xxxv, p. 275, 1902). Mr. MacArthur reported having bred a puss moth, *Dicranura vinula*, which had been lying over since 1901. Mr. Sieh reported having found larvæ of this species at St. Moritz, 6000–7000 feet elevation, and he had also found *D. furecula* at the same elevation.—H. J. TURNER, Hon. Secretary.

## SPANISH AND MOORISH MICRO-LEPIDOPTERA.

BY THE RT. HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S., &amp;c.

(Continued from page 187).

2171 : 1.—LASPEYRESIA ILIPULANA, *sp. n.*

*Antennæ* whitish cinereous. *Palpi* white (including the terminal joint). *Head* whitish-cinereous. *Thorax* whitish, transversely mottled with greyish fuscous. *Fore-wings* greyish white on the basal half, mottled transversely with greyish fuscous, the costal marks oblique, the dorsal erect; the outer half of the wing dark olivaceous brown, this colour extending inward on the costal third to a little before the middle (there is no pale break in the dark colouring as between the terminal and costal areas), its anterior limit is clearly defined being usually biangulate on the dorsal half, one angle above, the other below the fold, the white base-colour projecting to a point above the upper angle, but not continuing to the costa or apex; the ocelloid patch contains several short black streaks, or elongate dots, and is enclosed by a broad shining metallic steely bar preceding, and a narrower similar bar following it, the latter broken in the middle, its lower half reverting obliquely towards the tornus; in the dark brown shaded portion are five pairs of geminated whitish streaklets, the first and third pairs throwing oblique steel-grey lines outward, one to the ocelloid patch, the other longer reaching the termen at an indentation below the rounded apex; cilia steely grey. *Exp. al.* 12—15 mm. *Hind-wings* pale brownish grey; cilia still paler, steely grey, a slightly darker line separating them from the margin; under-side scarcely reticulated, except at the extreme apex. *Abdomen* pale brownish grey, with shining paler segmental divisions. *Legs* pale brownish grey, with whitish tarsal annulations.

*Type*, ♂ (86974); ♀ (86975). Mus. Wlsm.

*Hab.*: SPAIN—GRANADA—Granada, 24.V.1901. Seventeen specimens.

This species might easily be mistaken for the common *succedana*, Fröl., to which it is undoubtedly nearly allied. Although subject to slight variability it possesses one character by which it can be easily distinguished; the dark clouding on the apical half of the wing reaching invariably to the costa without interruption, and with equal intensity throughout, moreover, although some few varieties of *succedans* may approach it in this respect, in so far that they do exhibit dark shading about the middle of the costa, this is not connected in the same way with the terminal and tornal area. The palpi of *ilipulana*, also, are uniformly white, whereas in *succedana* the terminal joint is almost invariably blackish, or at least much darker than the median.

I found this species abundant at Granada by beating isolated bushes of *Dorycnium*, where no *Genista* or *Ulex* occurred, and although the true *succedana* is not uncommon in the south of Spain, I did not

hesitate to distinguish it at first sight; this opinion is confirmed after careful study. The larva will almost certainly be met with on *Dorycnium*.

2171 : 2.—*LASPEYRESIA BLACKMOREANA*, *sp. n.*

= *Grapholita succedana* (Fröl. ?), Stn., Ent. Mo. Mag., VIII, 232 (1872) <sup>1</sup>.

*Antennæ* dull cream-whitish. *Palpi*, *Head* and *Thorax* cream-white. *Fore-wings* cream-white, with six or eight oblique pale rust-brown costal streaks from one-third to near the apex, the terminal and tornal portion of the wing shaded with rust-brown mixed with scattered lines of black scales before, within and sometimes above, the ocelloid patch which is bounded on either side by shining metallic steel-white bands, the outer one broken in its middle; before the middle on the dorsum arises a slender outwardly curved line of mixed rust-brown and black scales, its apex extending across the fold to the cell; the pale ground-colour of the wing is very faintly mottled about the base and dorsum; cilia creamy, a line of black dusting along their base, the outer half also dusted with black. *Exp. al.* 14—16 mm. *Hind-wings* pale brownish grey; cilia shining brownish white, a brown line running along their base, and sometimes a narrow one along their middle. *Abdomen* brownish grey. *Legs* whitish, tarsi faintly spotted.

*Type*, ♀ (87337); ♂ (87335). Mus. Wlsm.

*Hab.* : MOROCCO—Tangier, 4–20.I.1870. (Blackmore) <sup>1</sup>, 9.IV.—9.V.1902 (Wlsm.). Seven specimens.

This species is nearly allied to *succedana*, Schiff., Fröl., but is paler, more creamy, inclining to ochreous, the dark outer shading being rust-brownish, and not so distinctly in contrast to the ground colour as in that species. The average size is perhaps slightly larger, and there is a uniformity of character and appearance throughout the series which should certainly prevent confusion except in the case of much-worn specimens of either species.

*L. blackmoreana* occurs on the sand-hills at Tangier among *Retama monosperma*, and was referred to by Stainton in his account of Blackmore's collection as "*Grapholita succedana*, Frölich. Four specimens taken amongst broom on the sandhills, January 4th to 20th, 1870, may, perhaps, be referable to southern forms of this species; they look, however, very different from our English *ulicetana*," from which, however, he did not venture to separate it.

2214 : 1.—*LASPEYRESIA INTACTA*, *sp. n.*

*Antennæ* black. *Palpi* fawn-ochreous, black at the apex. *Head* very dark fuscous. *Thorax* blackish. *Fore-wings* blackish, with some slaty blue iridescence towards the base; four partly geminated ochreous costal streaks on the outer half, terminating in steel-blue lines, the first dilated, diffused and curved, reaching

nearly to the tornus, but not clearly defined; the others converging and produced when united parallel to the termen, between these and the first is a curved line of black spots, narrowly margined with eupreous and more or less confluent, the termen and apical portions slightly eupreous, a black line along the base of the shining bronzy cilia; a large triangular dorsal patch reaching to the upper extremity of the cell, with a few black scales in its base on the dorsum, sometimes extending upward; under-side showing the pale costal and subterminal streaks, with a slight pale line along the cell. *Exp. al.* ♂ 13 mm.—♀ 15 mm. *Hind-wings* dark brownish fuscous, slightly paler at the base; cilia bronzy grey, a fuscous line along their base. *Abdomen* dark fuscous. *Legs* fuscous, hind tarsi banded with pale ochreous.

*Type*, ♀ (87346), Mus. Wlsm.; ♂ (3953. *Wlsm.* 1903), Mus Caradja.

*Hab.*: MOROCCO—Tetuan, 26.IV.1902 (*Wlsm.* *Type*, ♀). ALGERIA—Lambessa, 1902 (*Korb.* ♂ ♀). Three specimens.

The ♂ differs from the ♀ in the paler, more brownish colour of the fore-wings, in the more distinctly geminated costal streaks, in having distinctly darker palpi, and in the noticeably pale, almost whitish, base of the hind-wings, of which the cilia are also whitish; the costal and submarginal streaks on the under-side of the fore-wings are decidedly less conspicuous than in the ♀.

The species is closely allied to *selenana*, Z., but differs in the much broader dorsal patch, and in the less clearly defined transverse lines which follow it.

## 2231 : 1.—PAMMENE COCCIFERANA, *sp. n.*

[= *Phthoroblastis cocciferana*, *Peyr. MS.*]

= *Phthoroblastes* \**spiniana*, Stn., *Ent. Mo. Mag.*, VIII, 233 (1872), [*nec Dp.*]

*Antennæ* dark fuscous. *Palpi* uniformly fuscous, without white scales. *Head* blackish on the crown; face fuscous. *Thorax* dark fuscous, the ends of the tegulae slightly paler. *Fore-wings* dark bronzy brown, suffused with dark greyish fuscous at the base, except on the costa, a large semicircular white patch on the middle of the dorsum (sometimes with a slight projection extending above the fold, sometimes also with a fuscous streak in its middle on the dorsum), a bluish leaden grey half-fascia extends from the upper extremity of the dorsal patch obliquely backward nearly to the costa, a longer fascia beyond the middle, bent at the upper angle of the cell, also reaches backward toward the costa and downward toward the tornus where it joins a narrower streak of the same metallic hue which runs parallel with the termen throughout, these streaks do not actually reach the margins; some black tooth-like marks are exhibited on the rather pale ochreous ground-colour of the ocelloid patch, a few black scale-spots being sometimes found in the same line above this patch; on the costa are about six pairs of geminated pale ochreous streaklets, those nearest to the apex being slightly curved; cilia shining metallic bluish leaden grey, a dark brown line running along the termen at their base; the



paler markings are somewhat plainly indicated on the dark under-side. *Exp. al.* 10—13 mm. *Hind-wings* very dark brownish fuscous, the costa whitish; cilia varying from white to brownish, with a strong brown line running through them near their base. *Abdomen* blackish. *Legs* dark brown; tarsi with four whitish bands.

*Type*, ♂ (87178) Tangier, Mus. Wlsm.

*Hab.*: MOROCCO—Tangier, 11.II.—9.III.1902. [S. FRANCE? ex Mus. Peyr.] Eighteen specimens.

A large series of males taken at various dates, flying with *salvana*, Strg., over *Quercus coccifera* at Tangier. This form was less common than *salvana* when this species first appeared, but afterwards became equally abundant. It partakes so much of the colour and pattern of *salvana* that I had at first regarded it as a variety throwing up the white dorsal patch, but I was probably misled into this theory by always meeting them together; and having regard to the fact that *albuginana*, Gn. (= *gallicolana*, Z.), and *amygdalana*, Dp. (= *lobarzewskii*, Nwki.), have been associated together as mere varieties it is not difficult to recognise a strong parallelism between *salvana* and *amygdalana* on the one side, and *cocciferana* and *albuginana* on the other. If any collector should succeed in breeding *albuginana* from ova of *amygdalana*, or *vice versa*, I should at once sink *cocciferana* under *salvana*. My choice of the name *cocciferana* is made to avoid any possible confusion, for although I am unable to discover any previous publication of this name, it stood in de Peyerimhoff's collection for the species here described. I have an original specimen (5230) received through the late M. Ragonot under this name, but without indication of locality. It was probably found in the South of France.

*P. cocciferana* is closely allied to *albuginana*, Gn., but is at once distinguishable among other characters by its dark palpi, which form a strong contrast to the longer palpi of the other species which are white and only black tipped.

#### 2254 : 1.—PAMMENE ORNATA, *sp. n.*

*Antennæ* and *Palpi* black. *Head* and *Thorax* black, the latter with a purplish sheen on the tegulæ. *Fore-wings* purplish black at the base, rich coppery beyond the middle, the two shades separated from each other by a broad, outwardly angulated, rich purple fascia before the middle; beyond this is a curved or slightly angulated fascia of the same colour crossing the coppery area and this again is succeeded by a shorter and less conspicuous purple line before the apex, a small purple spot lying below the costa nearly at the apex; a few yellowish ochreous scales form an inconspicuous line of costal spots on the outer third of the wing (these are confluent on the under-side); cilia brassy metallic, with a black line



running along their base. *Exp. al.* ♂ 9—10; ♀ 11—12 mm. *Hind-wings* bright yellow-ochreous, shaded towards the apex with fuscous, and with two black dashes lying parallel on either side of the outer branch of vein 1, and nearly reaching the margin of the wing (these are only formed in the ♂), the limbus is also shaded with fuscous; cilia bright yellow-ochreous, with a slight shade-line near the base. *Abdomen* and *Legs* dark fuscous, the latter with a few pale tarsal spots.

*Type*, ♂ (S7148); ♀ (S7149). Mus. Wlsm.

*Hab.*: MOROCCO—Tangier, 6-9.III.1902. Thirteen specimens.

This species is nearly allied to *rhediella*, Cl., but differs in the distinct purple bands of the fore-wings, and in the bright yellow ochreous colour of the hind-wings. It also approaches closely to *pupureana*, Cnst., which although somewhat similar in the colouring of the fore-wings, has always dark hind-wings; it is probable, however, that the food-plant is the same, a series of thirteen specimens, showing no appreciable variation, except between the sexes, having been all taken among *Arbutus unedo* on the hills above Tangier in the beginning of March.

2197: 1.—EUCELIS MALCOLMIE, *sp. n.*

= *Grapholita*, *n. sp.?*, Stn., Ent. Mo. Mag., VII, 233 (1872).

*Antennæ* hoary cinereous. *Palpi* and *Head* hoary whitish cinereous. *Thorax* cinereous, faintly speckled with pale greyish fuscous. *Fore-wings* narrow, elongate, widening outward, costa straight, apex rounded, termen oblique, scarcely at all sinuate; whitish cinereous, with more or less pale brownish and pale greyish fuscous suffusion; the costa with a series of oblique streaks throughout, these are fuscous at their origin, fading to brown, the intervening spaces somewhat geminated, whitish, becoming silvery outward in those beyond the middle, the one before the apex somewhat inverted and produced to the silvery outer margin of the oelloid patch which has three or four transverse black streaks and is more widely bounded with silvery behind; an outwardly oblique cuneiform whitish patch lies on the middle of the dorsum, ill-defined on its inner and outer edges and divided by indistinct brownish or fuscous lines, its outer extremity reaching to the end of the cell; a few very indistinct darkish streaks lie on the dorsum before the middle and a narrow blackish marginal line precedes the silvery grey cilia. *Exp. al.* 10—13 mm. *Hind-wings* greyish white at their base, much shaded with bronzy brown about the apex and termen; cilia dirty whitish, with a brownish shade along their base. *Abdomen* brownish cinereous; shining yellowish white beneath. *Legs* whitish, with faint tarsal spots.

*Type*, ♂ (S7107); ♀ (S6586); Larva (S7110). Tangier, Mus. Wlsm.

*Hab.*: SPAIN—CADIZ—San Fernando, 15.XII.1900; Cadiz, 14.V.1902. GIBRALTAR, 2.III.1901; Larva *Alyssum maritimum*, 2.III. excl. 5.IV.1901. MOROCCO—Tangier, 13.IV.1901; 28.XII.1901—12.I.1902; Larva *Malcolmia littorea*, XII.1901. excl. 2.I—18.II.1902. Thirty-seven specimens.

This species varies somewhat in the extent of its suffusion, but the markings are uniform throughout a considerable series. It appears to be nearly allied to *Eucelis maderæ*, Wltn., differing however in its paler colouring and smaller size, as well as in the form of the costal streaks.

At first sight it rather reminds one of the larger and wider *Laspeyresia leplastrierana*, Crt., which I must continue to regard as distinct from *L. capparidana*, Z., with which it has been confused in Staudinger's Catalog, despite the expressed opinions to the contrary of Lederer, Barrett, and Ragonot. The costal streaks immediately preceding the apex are longer in *leplastrierana* than in *capparidana*, and the strigulate patch is much more distinctly defined on its outer side, and more compressed at its apex; *leplastrierana* is also a broader-winged and darker species, although British forms of European species are usually smaller, not larger than their congeners. So far as I am aware the true *leplastrierana* does not occur on the continent. A new locality for *capparidana* is Corfu, where I took the species in 1872.

I first met with *malcolmiæ* at San Fernandez in 1901, and subsequently bred it from a larva feeding on *Alyssum maritimum* at Gibraltar. It is extremely abundant on the coast near Tangier, where it burrows down the leading shoot of *Malcolmia littorea*, which grows on the sand-hills, drawing the terminal leaves together in some cases, and always causing them to droop, so that the larva is very easy to discover however far down it may be in the stem (and it frequently descends at least three inches from the top). The larva is whitish, the head honey-yellow, the pronotal shield paler and greyer, somewhat darkened along the suture and outwardly. The flight of this species continues for some months, during which larvæ are usually to be found in all stages.

2797 : 1 (= 2833).—ARISTOTELLA REMISSELLA, Z.

*Gelechia remissella*, Z. ls. 1847. 854—5; &c. ....

*Anacamptis remissella*, Stgr. and Rbl. Cat. Lp. Pal. II. 2833 (1901).

This species agrees in neuration with the *Xystophora* group of the genus *Aristotelia*, Hb., Meyr. The separate origin of veins 3 and 4, and 6 and 7 of the hind-wings will at once separate it from *Aproa-rema*, Drnt. (= *Anacamptis*, Stgr. and Rbl. nec Crt.; *Anacamptis*, Crt., type *populella*, teste Curtis, = *Tachyptilia*, Hein.).

Additional localities for *remissella* are FRANCE—(Pyr. or.)—Thuès-les-bains, 24-26.VI.1900. SPAIN—GRANADA—Granada, 24.V.—12.VI.1901.

(To be continued).

AN EXPERIENCE IN INTERBREEDING *CLOSTERA ANACHORETA*.

BY C. G. BARRETT, F.E.S.

Early in June two years ago Miss A. D. Edwards very kindly sent me some eggs of *Clostera anachoreta*, mentioning at the same time that the parent moths were descended from specimens of her own capture several years before at Deal, also that the breed showed symptoms of exhaustion, the last brood having been difficult to rear. At first I found no symptoms of weakness; most of the eggs hatched and the larvæ were thoroughly healthy, being blessed with appetites of a most satisfactory nature. They took to Lombardy poplar and fed up upon it in about a month, producing a fine brood of moths in July, from which plenty of eggs were obtained. Some of these eggs were infertile, but a sufficient number hatched, and the larvæ fed most eagerly upon black or spreading poplar, so that about the end of August I had an abundance of pupæ, and also had turned out many larvæ to shift for themselves among the abundant poplar trees around. From the pupæ reserved moths very soon commenced to emerge and went on till all had appeared, forming a complete and abundant third brood of moths in the season. These also paired freely, and laid plenty of eggs, of which perhaps one-half were infertile. The young larvæ from the remainder were soon feeding on both kinds of poplar, but there was no indication to be seen upon the trees of any larvæ out of doors. As the weather became cooler the indoor larvæ became more and more sluggish, feeding so slowly that when the night fogs commenced a large portion of them were still feeding. Then trouble began. The night fogs appeared to have even more influence than the frosts in shrivelling the poplar leaves and rendering them both worthless and distasteful to larvæ, and it was only by searching the neighbourhood for sound leaves in sheltered spots that it was possible to induce them to feed up. By the commencement of November, however, most of them had done so, and the rest were necessarily thrown away. The pupæ from these should, according to rule, have laid safely through the winter to produce the spring brood of moths. But early in November, in the shelter and warmth of the house, the moths again began to emerge—a fourth generation in the season—and in spite of all that I could do specimens continued to make their appearance, day by day, till the middle of December, when discouraged by being put out of doors into the coldest part of the garden, and by frosts, emergence ceased. These winter specimens were utterly inert, some of them could not spread

their wings, none were disposed to fly, or indeed to move about, and there was no case of pairing or of the laying of eggs. Still a good number of pupæ remained alive, and from these, moths were produced in the following spring. They however showed very little of the vigour of those of the preceding spring and summer. A few—reluctantly—paired, and eggs were duly laid; but of these not a single egg hatched. Here the long experiment, conducted for years, had arrived at an absolute conclusion; an end due, notwithstanding the extreme docility of the species, no doubt to continuous inbreeding. Perhaps if one had been upon the south coast of Kent wild males might have been attracted and fresh strength introduced. But it is very difficult to understand why so complete a failure should have been immediately preceded by a vigorous effort on the part of the race to produce a *fourth* brood in the year, and at a time when *no* food could have been obtained even had there been resulting eggs and larvæ!

The fate of the larvæ turned out of doors upon the poplar trees is obscure. No indication has been seen of them after the first few days, during which some of them remained upon the branches—no cocoons have been found about the trees, nor moths sitting about or coming to light, and some females put out to attract possible males remained disregarded. Whether the smoky condition of their food and the atmosphere, or the weather, was fatal to them, or whether their disappearance is due to the unfailing energy and activity of our legions of sparrows, remain questions open to argument.

Tremont, Peckham Rye, S.E. :

June, 1903.

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#### OCCURRENCE OF *THALERIA FIMBRIALIS*, Scop., IN GREAT BRITAIN.

BY CHARLES CAPPER.

When sitting on a slope under Beachy Head last year (August 7th) my little boy, who was with me, noticed on a blade of grass, apparently just emerged, a specimen of a moth quite unknown to me, which I at once boxed, and sent to friends at Liverpool for identification. They forwarded it to Mr. C. G. Barrett, who has informed me that it is certainly *Thalera fimbrialis*, Sc.

30, Glyn Mansions, Kensington, W. :

July, 1903.

[This specimen, which has unfortunately been damaged in the post, must have been in very perfect condition when captured, since the peculiar and rather striking

marginal spots with which its wings are adorned are perfect, and its lovely green colour is not in the least faded. It is a beautiful Geometer, closely allied to *Hemithea thymiaria*, Gn. (*strigata*, Muell.), which it closely resembles, but its marginal dark spots are larger and rounder, and its antennæ are distinctly pectinated in the male. *Thalera fimbrialis*, Scop. (*bupleuraria*, Schiff.) has an extensive distribution in Central, Southern and Eastern Europe, and there appears to be no "incompatibility" about its appearance in England. Guenée says he reared the larva on *Euphorbia cyparissias*.—C. G. B.].

## A NEW SPECIES OF *ARHOPALA* FROM BRITISH NEW GUINEA.

BY G. T. BETHUNE-BAKER, F.L.S.

### *ARHOPALA CHAMELEONA*, *sp. nov.*

♂. Both wings deep metallic green, shading into brown in some lights, in other lights the edges appear to be quite purple. Costa in the primaries finely black. Fringes black. In the secondaries the costa and fold is broadly brown, fringes black tipped with white at the apex, tail black tipped with white. Below the primaries are purplish-brown, the purplish tint being very strong on the costa, the median portion of the wing is occupied by a very large indefinite whitish patch, extending nearly to the posterior margin below vein 2. Three increasing cell spots, the third extending over the cell, above which is a small spot on the costa. Transverse band composed of seven dark brown spots, the first three placed obliquely outwards, the fourth shifted further outward, fifth very decidedly inwards, sixth outwards, the seventh spot being small and obscure; in the angle of veins two and three is another dark spot; submarginal band parallel with the posterior margin, all the spots and bands are edged with whitish. Secondaries purplish-brown, strongly purplish on the costa, the central area of the wing from the base to the submarginal band whitish, a very small dark spot at the base of the costa, followed by two others below vein eight, below these two are two other pale spots, those below that nearer the basal being mere traces of the spots, macular transverse band composed of eight spots, the first and second on the costa confluent and very dark, third and fourth whitish, marked only by a pale brown edging and shifted outwards, the fourth being beyond the third, fifth spot small, brownish, sixth darker brown, shifted outwards, seventh angular spot inwards, eighth spot bisected, pale and indefinite, reaching up to the internal vein, submarginal band lunular, evanescent at the apex and anal angle, anal spot blackish, above which is a white stripe from the internal margin to beyond vein three, which is irrorated above with bluish-grey scales. All the spots and bands are edged with white, margin very finely dark, edged interiorly finely with white.

♀. Primaries brownish-black, with a bright azure blue patch occupying most of the cell, about two-thirds of the space beyond towards the posterior margin, thence tapering basewards on to the inner margin, thus being in shape nearly a long oval. Secondaries uniformly dark brown. Below, the pattern is just like the male, but is more purplish in tone.

Exp. alar., ♂, 52, ♀, 49 mm.

The type is in the Tring Museum. This species, which is quite



unlike anything known, should be placed in the *subfasciata*, Moore, group, but its green colour will separate it from any of its neighbours. The green is most peculiar, changing somewhat at all angles of light; in a very strong light the wing becomes suffused with rich purple.

The species occurs in March on the Upper Aroa river in British New Guinea.

Edgbaston: August, 1903.

## A NEW SPECIES OF *ARHOPALA* FROM SINGAPORE.

BY G. T. BETHUNE-BAKER, F.L.S.

### *ARHOPALA* MALAYANA, *sp. nov.*

♂. Both wings pale sublustrous mauvy-blue, quite dull and rather dark in some lights, bright and lustrous in others, with a linear black marginal line all round, except the costa of the secondaries, which is somewhat broadly brown, as also is the abdominal fold. Tail brown tipped with white, on the primaries at the lower end of the cell is a large roundish patch of differently placed scales, quite conspicuous, not altering the colour but making it denser. Under-side: both wings pale olive-brown, with slightly darker spots palely edged. Primaries with three increasing cell spots, below the third another in the angle of veins two and three. Transverse catenulated fascia distinctly fractured below the fourth spot, the fascia is composed of six spots, the first four nearly confluent (the first spot on the costa being very obscure and small) and very oblique, the fifth and sixth below each other likewise oblique, but shifted right inwards and quite detached, submarginal row obscure, ground colour paler below vein two. Secondaries with four small basal spots below each other, the fourth shifted inwards, four large spots across the centre of the cell, the first below the costa, the fourth near the inner margin, cell closed by a large spot, below which is another touching the third spot of the previous row. Catenulated fascia composed of eight spots in pairs, the second spot shifted out from the first, these two are quite detached from the rest of the fascia, third spot shifted right outwards, fourth further out, fifth well inwards, sixth slightly outwards, seventh spot slightly angled and detached from the sixth and from the eighth, which latter I have already mentioned as being the lowest spot of the second row of four spots, submarginal row fairly distinct. Anal spot black, with a second beyond it nearly obscured by a heavy scaling of very pale greenish-blue metallic scales, which edge the anal spot above.

Exp. alar., 52 mm.

*Hab.*: Singapore.

The type is in the Tring Museum; it will come in the *Atosia* group of the genus next after *Epimuta*, Moore, but is so very much larger that it can be recognised at once, the catenulated fasciæ being quite different.

Edgbaston: August, 1903.

CONTRIBUTIONS TO THE LIFE-HISTORY OF  
*GELECHIA (RECURVARIA) NANELLA*, Hb., FROM AN ECONOMIC  
POINT OF VIEW.

BY J. T. HOUGHTON.

In the summer of 1902 I was asked to examine the fruit trees in the gardens at Osberton Hall, Worksop, the seat of the Rt. Hon. F. J. S. Foljambe, with a view to suggesting a remedy for the devastations of a minute insect which in previous years had practically destroyed the crops of apricots. The results of my observations appear to have proved of so much interest that I venture to give them for the benefit of entomologists generally.

The first indication of the presence of the insects was given during the first week in August, when the larvæ were noticed mining in the leaves of apricots; throughout August and September they continued to feed in the leaves; on October 10th I found that many were leaving the mines, and were forming silken hibernacula, some in the crevices of the wall, others in the pieces of cloth used to fasten the trees to the wall, while others again had formed them in the axils of the buds. On October 25th I opened some of the silken cases and found the larva inside still unchanged.

On February 15th one larva in captivity emerged from its hibernaculum and began to attack the tip of the bud, boring towards the base; by the 18th it was quite inside, and I found it feeding between the leaves and the bud scales. Under natural conditions I observed the first larva crawling on the twigs on February 27th, 1903.

On again examining the trees on March 5th, I found that all the larvæ were on the move, some boring into the bud at the base, and others attacking it at the apex. On this date I also found some of the same larvæ on the buds of a cherry tree.

No further change was noticed until March 31st, when on again examining the trees I found many of the leaf buds of the apricot bound to the side of the twig with silk, and on examining the blossoms of some of the peach trees I found many of them were ruined by the larva having eaten out the entire contents of the bud. Some of the buds were lined with silk, and on May 28th I found the first pupa inside the bud. This appears to be the favourite position for pupation, but I have also found the pupa enclosed in a white web in the shreds of cloth used in fastening the tree to the wall. On emergence the pupa case does not protrude, and it is therefore difficult to see from which of the buds the moth has emerged.

I have opened a lot of buds which I had kept in a chip box, and in every case I found the remains of the pupa inside the bud. I also carefully removed part of the buds from some shoots from which moths had emerged, with a view to deciding whether the shoot itself was injured in any way, but as far as I can see the larvæ have not touched the shoot or pith in any way, it was the bud only which had suffered in all the cases which I examined. The first imago appeared on July 1st, and by the second week in July they were again quite common; I have not noticed that they rest on the foliage during the day, but found many on the wall against which the trees were trained.

To summarise the above, I may say that although this insect is usually described as frequenting pear trees, I have not yet found it on the pears at Osberton. On apricots and peaches it has appeared in swarms; I have also found larvæ in the buds of cherry, but not commonly, and in another garden near to Osberton two plum trees are badly infested.

I have had larvæ from both pear and apple trees, but they have on emergence invariably proved to be some species of *Tortricæ*, to several of which the larva of *R. nanella* bears considerable resemblance when nearly full grown.

#### LARVA.

The larva, which exhibits the usual characteristics of the *Gelechiadæ*, is, when young, of a russet-brown, with the head, upper surface of legs, a plate on segment 2, and a small plate on the anal segment, vandyke-brown. These colours remain unchanged up to hibernation, at which time the larva has attained a length of from 3—4 mm. Soon after emergence the anal plate is lost, and early in May I noticed considerable variation in colour, some being a greenish-brown, whilst others were pale green, but all retained the vandyke-brown head and cervical plate. The full grown larva measures from 8—10 mm. The variations of the larvæ do not appear to be of any consequence, as all the moths are practically alike.

#### PUPA.

The pupa examined on May 28th had the head and three terminal segments pale brown, wing cases and centre of body pale shining green, but by June 30th the colour had become uniform pale brown.

Length of pupa, 5 mm.

#### BIBLIOGRAPHY.

I am indebted to Mr. Eustace R. Banks for the following list of works in which reference has previously been made to the life-history of *R. nanella*:—Stainton, Insect. Brit. Lep. Tin., p. 129 (1854); J. W. Douglas, Ent. Mo. Mag., xv, p. 207 (1879); J. W. Douglas, Ent. Mo. Mag., xvi, p. 116; E. Meyrick, Handbook of British *Lepidoptera*, p. 580 (1895); Frey, Tin. u. Pter. Schweiz, p. 126 (1856); Frey, Lep. der Schweiz, p. 366 (1880); P. C. T. Snellen, De Vlinders van Nederland, Microlep., 11, 671 (1882); Sorhagen, Kleinschmet. d. M. Brandenburg, p. 199

(1886). Some of my observations differ considerably from those recorded in the above works.

Public Library, Workshop :  
July, 1903.

[Mr. Houghton has obliged me with a mined leaf of the apricot as referred to. This proves to be particularly interesting, since it solves a recent difficulty. The mines are short and slender, but filled out on both sides of the leaf, and, I believe, agree most accurately with mines which were sent to me—in far greater numbers in a leaf of apricot—either last year or the year before, and were then supposed to belong to the earliest stage of the life of the larva of some common *Tortrix*. Now I feel no doubt that they were those of the present species, so ably worked out by Mr. Houghton.

Mr. Stainton, in the *Insecta Britannica*, says, under *nanella*:—"The larva (detected by Mr. Wing) feeds in May on the pear, making a gallery across the flowers, with pieces of the petals and stamens interwoven with silk;" and this is followed in the "*Manual*;" but there is no indication that Mr. Stainton was himself familiar with the larva, and it is not included in his *Natural History of the Tineina*.

Mr. Douglas noticed an incongruity between this statement and his own experience, since he found the moth on apple trees, while he found none on pear.

Yet we have always associated this species with pear, because it is very certain that here in the suburbs of London, where it is often common, it shows a strong attachment to pear, sitting in the moth state on the branches and trunks of this tree, or if on another species of tree or a paling, in close proximity to some pear tree.

Anton Schmid, Heinemann, Rössler, and Sorhagen, however, show that while feeding on pear flowers and shoots, it is also mischievous to various species of fruit trees, especially stone fruits—not omitting to attack hawthorn and wild plum.—

C. G. B.]

*PACHYGASTER MINUTISSIMUS*, ZETT., A STRATIOMYID FLY NEW  
TO BRITAIN: WITH NOTES ON *P. TARSALIS*.

BY D. SHARP, M.A., M.B., F.R.S.

In July last year Mr. C. G. Lamb found at Wells a *Pachygaster* which, on examination, I find to be *P. minutissimus*, Zett. It is a very distinct species, being smaller than any other, and having the abdomen shining and polished, quite without sculpture. The subcostal vein turns forwards just beyond the stigma and gives off no cross-vein to the front, so that the species may probably give rise to the formation of a new genus.

Since Loew published his Revision of the European *Pachygaster* in Zeitschr. Ges. Naturw., xxxv, 1870, pp. 257-271, only one European species has been described, viz., *P. pini* (Perris, Ann. Soc. Ent. France [4], x, p. 208), and Mik, in 1880, has identified this as *P. minutissimus*,

Zett., which species appears to be attached to conifers. Mr. Lamb found only one specimen, and it is a male.

During the present summer Mr. Lamb and my daughter, M. A. Sharp, have found in the New Forest a large *Pachygaster*, which I make out to be *P. tarsalis*, Zett. Though the name of this species appears in Mr. Verrall's list, little or nothing seems to be known about it as a British species. The wings have a dark cloud near the base, as in *P. ater*. We found three examples, and I suppose they represent the two sexes. If so, it is a *Neopachygaster*. Mr. Verrall, however, thinks they are all females; and he has in his foreign collection examples which are probably males of this species, and have the eyes confluent in front. I am, however, not quite satisfied as to this, and hope to obtain better evidence next year.

Two years ago Mr. Austen, in this Magazine (Ent. Mo. Mag., xxxvii, p. 241) established the new genus *Neopachygaster*, for a species I discovered in the New Forest, and which was determined by Mr. Austen to be *P. meromelas*, Duf. In his new list of British *Diptera*, Mr. Verrall does not accept *P. meromelas* as the name of the species for which Mr. Austen founded *Neopachygaster*, but calls the insect *P. orbitalis*, Wahlb. Loew gives the two names as synonymical, adopting *P. meromelas* as prior. I presume Mr. Verrall has evidence that leads him to treat Loew's synonymy as incorrect, and that he will present it in the forthcoming volume of his "British Flies." Dr. Jenkinson found *N. orbitalis* this year near Brockenhurst.

Cambridge: July 29th, 1963.

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#### VERRALLIA AUCTA AND ITS HOST.

BY F. JENKINSON, M.A., LL.D.

I suppose the oviposition of *Pipunculidæ* has been recorded somewhere, but I have not seen it described; although the form of the ovipositor and the strong legs and claws (sometimes at least larger in the female) enable us to guess what must take place. Noticing *V. aucta* to be common in my garden on the morning of July 5th, I determined to watch them as they busily beat over every inch of the herbage. I sometimes had four in view at one time. Frog-hoppers being as scarce as *Verrallia* was common (perhaps these facts are not entirely unconnected with each other), I occasionally caught one and put it in the *Verrallia*'s path, with complete success. As soon as a *Verrallia* saw a frog-hopper it poised itself in the air (like a kestrel hovering, but with a certain intensity perceptible in its



motionlessness), and if the position of its victim was favourable, it pounced upon it immediately. Then the frog-hopper hopped; in some cases the fly lost it; in some cases the fly re-appeared instantly from the place to which the frog-hopper hopped. In one case I saw the frog-hopper land with the fly still on its back; I caught both, without waiting, as perhaps I should have done. If the position was unfavourable, or stems got in the way (*e. g.*, *Geranium Robertianum*), the fly would circle round with its head towards the victim, like a male *Dolichopus*, seeking a point from which to pounce. On several occasions it failed to get a hold. Once a fly pounced on a frog-hopper which did not hop; the fly immediately left it. Another came up and looked at it, but went away without touching it. Was the frog-hopper already entertaining an egg, or was it a male, or for some reason unsuitable? *Chalarus* is common in my garden, but I have not been able to see anything of its oviposition.

These observations are crude and inconclusive on several points; but I send them on the chance that others who can afford the time will complete them. The flies are still common, and the frog-hoppers now less scarce.

10, Brookside, Cambridge:  
July 15th, 1903.

# SOME REMARKS ON *HYDROPORUS GRANULARIS*, L., AND *H. BILINEATUS*, STURM.

BY E. A. NEWBERRY.

In the June No. of this Magazine, Mr. A. J. Chitty brought forward *Hydroporus bilineatus*, Sturm, as an addition to the British list. The opinions of recent authors concerning this insect are various and conflicting.

In 1881 Bedel (Coleop. Bassin de la Seine, i, p. 262, foot note) states that *H. bilineatus*, Sturm, is the ♂ of *granularis*, L. In 1882 Dr. Sharp (Trans. R. Dub. Soc., ser. 2, ii), in his valuable work on the *Dytiscidæ*, gives both species, and states that Bedel's view, just referred to, is erroneous. He describes *H. bilineatus* as a more elongate insect than *granularis*, with longer anterior tarsal claws and more strongly dilated tarsi in the male, and some minor differences. In 1887 Dr. Seidlitz (Bestim. Tab. der Dytiscidæ, Brünn, p. 63) makes no mention of any difference of form, and separates the two species principally by the the first elytral line reaching the base in *H. bilineatus*, not reaching the base, and being dilated in front towards the side margin in the form of a hook, in *H. granularis*. As far as I know, this is the most recent work on the subject. Sturm's original description is not bad for the time at which it was written (1805), and he figures both species, but exaggerates the difference in form.

I have in my hands at the present time a large number of *H. granularis*, and have given them a careful examination. I have also seen Mr. Chitty's series of *H. bilineatus*, from Deal. The conclusion I have come to is that while we have two distinct species or forms in Britain, they cannot be separated by the colour, shape, or position of the first line, since even in insects from the same pond these are all very variable; the first line is even wanting altogether sometimes, and in no British specimen that I have seen does it reach the base of the elytra. The form of the body in the genus *Hydroporus* is not a character of great value in separating species, many of them are very variable in this respect. In both the insects in question the male is rather more elongate than the female. *H. bilineatus* has, however, a more marked disparity in the sexes than *H. granularis*. The average size of the latter is also rather less.

There remains the character derived from the claws of the anterior tarsi of the male. It is difficult to see, and still more difficult to describe. Dr. Sharp has appreciated it, so also has Bedel, since his description of the male of *granularis*, "*♂ ongles des tarses ant. inégaux, l'externe très-long*," applies very well to the ♂ of *bilineatus*. Beyond the larger average size, usually more defined first line, and slightly more elongate form of *H. bilineatus*, I have not discovered a good character to separate the females of the two species; these may be known from the other sex by the less dilated anterior and intermediate tarsi, the second joint of the latter being not, or hardly, broader than long, and by the simple anterior claws.

The males may be separated by the following characters, which I have somewhat modified from Dr. Sharp's "*Dytiscidæ*:"—

Anterior tarsal claws very long, compressed laterally, and thickened underneath from base to very near apex, then suddenly narrowed into a hair-like point; hind tibiae scarcely dilated on inner side, which is finely setose; average size larger. L.,  $2\frac{1}{4}$ — $2\frac{1}{2}$  mm. .... *H. bilineatus*, Sturm.

Anterior tarsal claws as above, but shorter and much less conspicuously dilated; hind tibiae roundly dilated on inner side, which is strongly setose; average size smaller. L., 2— $2\frac{1}{4}$  mm. .... *H. granularis*, L.

The principal minor character to which Dr. Sharp refers is the punctuation of the posterior coxæ and middle of the metasternum, which is rather strong in *granularis*, and obsolete in *bilineatus*. I have not been able to verify this character.

12, Churchill Road, N.W. :

July 16th, 1903.

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AN ANNOTATED LIST OF *NEUROPTERA PLANIPENNIA*  
COLLECTED IN WEST CENTRAL SPAIN BY DR. T. A. CHAPMAN  
AND MR. G. C. CHAMPION IN JUNE AND JULY, 1902.

BY ROBERT McLACHLAN, F.R.S., &c.

At pp. 7—9 *ante*, I gave an enumeration of the *Odonata* collected by Messrs. Chapman and Champion, in what may be termed the district of Bejar, in the summer of last year, with notes on the localities visited. I now treat the few *Planipennia* in the same manner; with

the addition of a species of *Panorpa* from San Sebastian (taken *en route*), probably new to the Spanish Fauna.

#### [PANORPIDÆ.

PANORPA GERMANICA, L. San Sebastian, one small pale ♂, approaching *var. apicalis*, Steph. (but which has no sharply-defined limitation in markings). I think this may be regarded as an addition to the Iberian Fauna, the only hitherto recognised Iberian species being the very different *P. meridionalis*, Ramb. *P. germanica* has been apparently unable to cross the Pyrenees, but it has crept round the lower western coast line.]

#### MYRMELEONIDÆ.

CREAGRIS PLUMBEUS, Oliv. Bejar and Avila, many examples.

MACRONEMURUS APPENDICULATUS, Latr. Piedrahita, 2 ♂, 1 ♀.

#### ASCALAPHIDÆ.

ASCALAPHUS LONGICORNIS, L. Bejar, 1 ♀. The Spanish examples are rather strongly marked, and are perhaps worthy of a racial name.

#### NEMOPTERIDÆ.

NEMOPTERA BIPENNIS, Illig. (*lusitanica*, Rbr.). "On the dry banks above some small streams close to Bejar, with an apparently slow dancing, twinkling, flight in the evenings, yet with some pace, and capable of almost miraculous disappearance if frightened."—T. A. C., *in litt.*

#### DILARIDÆ.

DILAR MERIDIONALIS, Hag. Bejar, Piedrahita.

#### HEMEROBIIDÆ.

MEGALOMUS TORTRICOIDES, Rbr. (*hirtus*, auct., *partim*). Bejar, 1 ♂. There is strong ground for believing that the smaller northern insect found in Britain, Scandinavia, &c., and therefore probably the true *hirtus*, L., is quite distinct from the larger and more southern insect to which the name *tortricoides* may be applied. I have long had a suspicion to this effect, and Mr. Morton, who has recently made a study of the subject, has practically raised this suspicion to a certainty. He will probably allude to the differences in a special paper; differences in the appendages of the ♂ appear to be conclusive.

#### CHRYSIDIDÆ.

CHRYSOPA FORMOSA, Brauer. Bejar, one small example.

CHRYSOPA PRASINA, Burm. (*aspersa*, Wesm.). Bejar, two examples, which should probably be referred to this apparently almost protean species; one of them is very large (exp. 33 mm.).

CHRYSOPA VULGARIS, Schud. Bejar and Piedrahita, apparently very common. Central Spain is apparently far less rich in species of this genus than are the eastern coast districts.

Lewisham, London :

January, 1903.

*Help-Notes towards the determination of British Tenthredinidæ, &c. : corrections.*—Herr A. Klöcker of Charlottenlund, Denmark, kindly calls my attention to an error in my Tables of Genera published last month, which I should wish to correct before it troubles my readers further.

In section 41 the second alternative clause should read, "The two medial *nn.* are received in different cells, or else the humeral *a.* is not petiolate."

It would have been better to have had a simpler section 41, merely separating off the *Blennocampid* genera from *Dolerus*, &c., by their petiolate humeral *a.*; but as it is, the above is the best way of rectifying the Tables that I can think of at present. (In section 8 *Calamenta* is a misprint for *Calamenta*).—F. D. MORICE, Woking: August, 1903.

*Note on Dianthæcia irregularis.*—It appears that *D. irregularis* is rarely taken at large in the perfect state; and consequently it may interest some of your readers to hear that during the last week in June I was fortunate enough to take four specimens in the immediate neighbourhood of Thetford. Two were of each sex, and all but one were in absolutely perfect condition. I took them at dusk on the edge of a field of sainfoin, interspersed with two species of *Silene*, *inflata* and *otites*, and containing also a good many plants of the white campion (*Lychnis alba*), though I did not notice particularly at which of these plants I took them. I tried another field in which there was a large quantity of Viper's Bugloss, thinking that there I should find the moth more abundant, but in that field it was "conspicuous by its absence."—C. F. THORNEWILL, Calverhall Vicarage, Whitechurch, Salop: July 31st, 1903.

*Aphelia argentana* in Norfolk.—The last fortnight of July, 1902, I spent at Dilham, a little village a few miles from Worstead, on the line from Norwich to Cromer, and as I found *Crambus perlellus* in some numbers, an insect not represented in my collection, I took a tolerably long series of it. I found it flying in the afternoon in a sunny lane, and it also came to my lamp when I was collecting at night. When I came to set the specimens I had taken, I found that I had two species of moths very similar in size and colour, but quite distinct in form, and when I returned home I was able to identify the second moth as *Aphelia argentana*, a Tortrix, a type specimen having been given me by a friend. I therefore, knowing nothing about the species, put my specimens into their place in my collection and thought no more about them. Recently I mentioned the circumstances to Mr. Barrett, and he expressed considerable doubt as to the possibility of my having taken the insect in such a locality, as it is a mountain species, taken on the Continent in the Alps, Germany, South-east France, Andalusia and Russia. It was first taken in this country in 1875 on the side of a mountain at Athole, Perthshire, and has since been found, I believe, in other mountainous parts of Scotland. Dr. F. Buchanan White, who recorded his first captures in Perthshire (Ent. Mo. Mag., vol. xii, p. 85) mentions that the habits of *A. argentana* are more those of one of the Crambites than of a Tortrix, and my impression is that I took my specimens (eight in number) flying in the afternoon with *C. perlellus* in the lane I have referred to. Mr. Barrett has seen them, and confirms the identification of the species. The last half of July

of this year I again spent at Dilham, and although I obtained a few specimens of *C. perlellus*, the Tortrix did not put in an appearance. The weather was very unfavourable, and there were very few insects about of any kind.—ARTHUR COTTAM, Eldereroft, Watford: August 10th, 1903.

*Does the subfamily Corduliinæ exist in Mexico or Central America?*—Does any one know of the undoubted occurrence of *Odonata* of the subfamily *Corduliinæ*, Selys, in Mexico or Central America? I find no mention of such in the literature, and the only specimen I have seen purporting to come from those countries is a male *Somatochlora lepida*, Selys, in the collection here, with the label "Mex." Nothing is known of the history of this specimen, to which I long ago added the label "locality probably erroneous." This enquiry is made in the interest of the Odonate part of the "Biologia Centrali-Americana," edited by Mr. F. D. Godman, F.R.S., &c.—PHILIP P. CALVERT, Academy of Natural Sciences, Philadelphia, Pa., U.S.A.: August 11th, 1903.

*Laphria flava* at Ariemore.—To-day, when collecting near Loch Gamhna, a specimen of *Laphria flava*, L., settled upon my wife's dress, but before I could get the net within reach of it, it had flown. A few years ago I took a specimen near the same place, namely the south side of the Loch, and thus away from where the forest fire laid waste the district.—JAMES J. F. X. KING, Ariemore: July 14th, 1903.

*Neopachygaster orbitalis*, Whlbg., and *Nephrocerus flavicornis*, Zett., in the New Forest.—On June 18th, near Brockenhurst, I had the good fortune to sweep a male of *N. flavicornis*. I kept it alive for several days; it usually rested on the roof of the pill-box, with its body sloped downwards at an angle of 30° or so. It has a facies of *Psilopus*, and to some extent of *Baccha*. The same afternoon a damaged holly tree produced one specimen of *N. orbitalis* sitting under the bark; two pupæ (many were empty) produced two more imagoes within a week.—F. JENKINSON, 10, Brookside, Cambridge: July 15th, 1903.

*Mallota cimbiciformis*, Fln., *Stegana coleoprata*, Scop., and *Acetozenus formosus*, Lw., at Cambridge.—On July 4th, about 10 a.m., I caught in my garden a fine female of *M. cimbiciformis* on a tallish bush of a tea rose, then in full flower and very sweet. This evening, on the roof of my greenhouse, I was surprised to see *S. coleoprata*. Yesterday *Acetozenus formosus* appeared, hovering about like a *Chlorops*, and settling daintily on leaves. I saw and took five between 10 and 11 a.m., and another at 3 p.m.; and five more to-day. I do not yet see any clue to its habits. I wish your readers could see them alive; the grace of their movements and the beauty of their colouring must be seen to be believed.—ID.

*Coleoptera* at Cambridge.—Dr. Sharp asks me to record *Hypophlaeus bicolor* among refuse (pigeons' droppings, &c.) from the roof of King's College Chapel; also *Thalycra sericea*, taken at Six Mile Bottom, while sweeping for *Diptera*. *Magdalinus barbicornis* has occurred in my garden.—ID.



*Tetropium fuscum*, Fab., at Betchworth, Surrey.—I think it may be worth while to record the capture of a specimen of the above species, which was made by my son, Herman Saunders, near Betchworth, in July, 1901. At the time it was caught I submitted it to Mr. Champion, who determined it as *Tetropium fuscum*; but both he and I thought it was hardly wise to record it, as in all probability it would prove to have been only a casual introduction. On seeing Dr. Sharp's notice of its capture in the New Forest (*antea* p. 198), Mr. Champion remembered the circumstances of my specimen, and suggested that I should now call attention to it. The occurrence of a second example in this country throws a possibly different light on the subject, and he remarks that it is not improbable that *Tetropium*, like *Asemum*, both of which are alpine or boreal in their distribution, may succeed in establishing itself in the South of England in places where Scotch Firs have long been planted. He considers my specimen to be a small dark ♀ of *fuscum*, but observes that the differences between *T. fuscum*, F., and *T. castaneum*, L. (= *luridum*, L.), are not very obvious, both being variable in size and colour. My son is often in the neighbourhood of Betchworth, and I will get him to visit the fir trees near the spot where he captured the specimen recorded, and try to obtain more.—EDWARD SAUNDERS, St. Ann's, Woking: August 18th, 1903.

*Odontæus mobilicornis*, F., again at Woking.—A fine male of this species was found this morning floating in a small pool of rain water in a galvanized iron bath in my garden! This is the fifth example that has come under my notice during the past ten years in this district.—G. C. CHAMPION, Horsell, Woking: Aug. 14th, 1903.

*Coleoptera in the New Forest*.—In view of the admittedly bad season in the New Forest, the following captures made towards the end of June may be worth recording:—*Anoplodera sexguttata*, *Leptura scutellata*, *Mycetochares bipustulata*, *Elater lythropterus*, and *Athous rhombeus*. This last insect was taken with one exception in the pupal state.—G. S. WHITAKER, 116, Trinity Road, Upper Tooting, S.W.: July 23rd, 1903.

*Coleoptera in the New Forest*.—Driven south from Rannoch by stress of weather, I put in a week at Lyndhurst in the middle of July, and found beetles scarcer than I had ever known them before. On two separate occasions two hours of steady hard work produced four specimens only, all of the commonest species, and although I found plenty of dead trees and felled logs, most of them were untenanted. My only captures of any note at all were two *Mycetochares bipustulata*, twelve *Cicones variegatus*, a number of *Litargus bifasciatus*, six *Mycetophagus atomarius*, two *Leptura scutellata*, and single specimens of *Melasis huprestoides*, *Callidium variabile*, and *Phlæotrya Stephensi*—almost all from one particular tree. The season seems to have been an exceedingly bad one, and the resident collectors were complaining bitterly.—THEODORE WOOD, The Vicarage, Lyford Road, Wandsworth Common, S.W.: July 30th, 1903.

*Cryptophagus ruficornis*, Steph., on Chat Moss.—A few days ago I received a large series of *Cryptophagus* from Mr. Kidson Taylor, who had taken them in fungus

on birch trees on Chat Moss; they were very variable, but all belonged to one species, *C. ruficornis*. Mr. Chappell took the species many years ago in the same locality and under the same conditions.—W. W. FOWLER, Peppard Rectory, Henley-on-Thames: August 15th, 1903.

## Obituary.

*John Sanders Stevens, F.E.S.*, died at his residence at Woking on July 15th, after a short illness from pneumonia, aged 59. He was elected a Member of the Entomological Society of London as long ago as 1862, when he must have been about 18. He was a younger son of J. C. Stevens, of King Street, Covent Garden, and assistant to his uncle Samuel Stevens, in the Natural History Agency so long carried on by the latter. When the agency was relinquished he became partner in a mechanical engineering business, and was very successful in connection therewith. There are few entomologists now living who remember "Johnny" Stevens of times gone by, but he retained an interest in Entomology to the last; he inherited his uncle's British Collections, and was a constant attendant at the invariably genial meetings of the Entomological Club at his uncle's house at Norwood. Those who knew him from boyhood will testify to his amiability of character, and regret that his death at a too early age severs a link between the past and present in the annals of the old Society.

## Review.

A CATALOGUE OF THE COCCIDÆ OF THE WORLD: by Mrs. MARIA E. FERNALD, A.M.: forming Bulletin No. 88 (Special Bulletin) of the Hatch Experiment Station of the Massachusetts Agricultural College. Pp. 360, large 8vo. Amherst, Mass., U.S.A. 1903.

The compilation of Catalogues such as this may be likened to the marking of milestones on a road until recently very little used, and the length of which is an unknown quantity. The serious study of *Coccidæ* is quite modern. Signoret, in his well known "Essai," may be said to have set the ball rolling, but he did not arouse much immediate enthusiasm—the subject was too obscure, and the time was not quite ripe. Then our venerable colleague Douglas began writing on *Coccidæ* in this Magazine, and it is practically to him that the impetus initiated by Signoret was developed. But the impetus is largely due to the Economic Entomologists: sometimes these are blamed for over-estimating the value of their work from the purely economic standpoint; it is impossible to over-estimate it from the scientific. In 1896, when Prof. Cockerell issued his "Check List of the *Coccidæ*," he enumerated 773 species. Mrs. Fernald in 1903 nearly doubles the number, a feat we venture to think unprecedented in the annals of Entomology; and the bibliography has increased to what may be termed by systematists an inconvenient extent, inasmuch as it embraces the study of a side branch of literary research not often considered necessary. It has been said truly of work such as this that the better it is done the sooner it becomes obsolete: at the present rate a new edition will be necessary in another half-decade or less; the wish that it may be compiled by the same hand will be echoed by all workers.

## Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—  
*June 25th, 1903*: Mr. E. STEP, F.E.S., President, in the Chair.

Mr. Councillor Newberry, of East Greenwich, was elected a Member.

Mr. Turner exhibited living imagines of *Coleophora nigricella* from Benfleet, and of *C. fuscedinella* from Dumbartonshire. Mr. Jäger, examples of *Papilio polydamas* from South Texas; a larva of *Chelonia plantaginis*, which had been probably attacked by a *Gordius aquaticus*; and a large *Tarantula* sp.? from India. Mr. Enock, a very large species of Ichneumon which he had just bred from a larva of *Eumorpha Elpenor* found at Woking. Mr. West (Greenwich), a series of a very local species of *Rhynchophora*, *Polydrusus chrysomela*, taken on *Chenopodium* near Gravesend. Mr. R. Adkin gave a short report of the Annual Congress of the S. E. Union of Scientific Societies which had just been held at Dover.

*July 9th, 1903.*—The President in the Chair.

Mr. West (Greenwich) exhibited several species of *Hemiptera* taken by Mr. Ashby at Deal, including *Podops inuncta*, *Sciocoris cursitans*, *Pseudophlæus Fulleni*, *Rhyparochromus prætextatus*, *R. chiragra*, and *Aphanus lynceus*; he also showed from Horsley *Eysarcoris melanocephalus* and *Gnathoconus albomarginatus*, and the following *Coleoptera*:—*Apion malvæ* from near Gravesend, *Hæmonia Curtisi*, *Cereyon littoralis* and *C. depressus* from the shore at Yarmouth. Mr. Sieh, a living example of *Geometra vernaria*, which he had just captured at Chiswick. Mr. Turner, cases with living larvæ of *Coleophora calibipennella*, which Dr. Chapman had just sent to him from Spain, and living imagines of *C. limosipennella* from Lewisham and of *C. cæspititiella* from Loughton, both bred from larvæ. Mr. Lucas reported that a number of examples of the Dragon-fly, *Æschna isosceles*, had recently been taken in the eastern counties.—HY. J. TURNER, *Hon. Secretary*.

### THE RELATIONSHIP OF *VESPA AUSTRIACA* TO *VESPA RUFA*.\*

BY GEO. H. CARPENTER, B.Sc., M.R.I.A.,  
 AND  
 DENIS R. PACK-BERESFORD, D.L.

If the naturalist in Ireland must be content with a somewhat poorer fauna for his studies than his colleagues in Great Britain have at their disposal, he can congratulate himself on being able to find, often in large numbers, species of animals that are uncommon across St. George's Channel. Of particular interest among these is the wasp *Vespa austriaca*, which until the last few years was considered one of the rarest insects in the Britannic fauna.

First described as a British wasp by Smith ('43) under the name of *V. borealis*, it was later re-named† by him *V. arborea* ('49 and '58), on account of the fact that

\* Published simultaneously in the "Irish Naturalist," September, 1903.

† Because the name *V. borealis* had already been applied by Kirby to a North American wasp.

the specimens first captured in Scotland and near Wakefield in Yorkshire were believed to build nests in fir trees. Subsequently the species was found very sparingly in other English localities—Gloucestershire and Cheshire (Ormerod, '68; Saunders, '96A), in North Wales (Gardner, '94; Nevinson, '00); in the Clyde and Forth districts of Scotland (Cameron, '75; Evans, '00; Malloch, '00, 01); and its identity with the continental species known as *V. austriaca*, Panzer, was recognised (André, '84). Though both male and queen of the species are known to continental entomologists, workers certainly referable to it have never been found. Smith, however, took, in company with the original queen-types of his *V. arborea*, a peculiar worker-wasp, which he was disposed to refer to the same species. Smith must have taken males also between 1858 and 1868, since both that sex and the supposed worker are figured, from specimens supplied by him, in Ormerod's work, published in the latter year. Then for many years the male of *Vespa austriaca* was overlooked in Great Britain until the Rev. O. Pickard Cambridge obtained a single specimen in Dorset (Saunders, '96B). Males have since been obtained by Nevinson ('00) in Carnarvonshire, and by Evans ('00) in the Edinburgh district. So far as we know the species has in Great Britain a distinctly western and northern range. Saunders has called attention ('02B) to the difference in the relative frequency of the species of wasps in southern and midland England as compared with Ireland. In Berks and Northamptonshire *Vespa germanica*—largely outnumbered in Ireland by *V. vulgaris*—is represented by 68 per cent. of the spring-caught queens; while *V. austriaca* is unknown. On the continent, also, *V. austriaca* haunts mountainous and northern regions. Sweden, Switzerland, the Vosges, the Rhine Valley, Southern Germany, and Western Austria are the districts it inhabits (Thomson, '74; André, '84).

*Vespa austriaca* was first noticed in Ireland by one of us (Carpenter, '93), who found several specimens among a number of queen-wasps received from Bray, Co. Wicklow. Subsequently its appearance in varying numbers in the same locality was traced through several years by Barrington and Moffat ('01). Freke ('96) mentioned that it was "not very uncommon in the Dublin district," while Buckle ('99) found in Cos. Derry and Donegal several queens and a single male—the first of the sex recorded from Ireland. In the same year one of us (Pack-Beresford, '99) extended the known range of the wasp into Down and Carlow, while two years later ('01) he captured 128 specimens of the male in the latter county; in 1902 again, over 100 males were taken in the same district. A single queen of *V. austriaca* was found by Col. Yerbury in the far west of Kerry (Saunders, '02A).

Much difference of opinion has prevailed among naturalists as to the exact nature of *Vespa austriaca*. Smith, as we have seen, regarded it as an ordinary social wasp, nesting in trees, like *V. sylvestris* and *V. norvegica*, and possessing the usual forms of male, queen, and worker. In his British Museum Catalogue ('58) he implies that the insects were actually observed by him building nests in fir trees, and it might be wondered why this seemingly definite statement by a careful naturalist should have been neglected or discredited by later writers. But reference to his earliest paper on the subject ('43) shows that the only fact in support of the statement was the presence of nests on trees in the wood where *Vespa arborea* occurred. No evidence is given to connect the insects captured with these nests.

All students of *V. austriaca* have been struck by its similarity to *V. rufa*, and



the suggestion that the two wasps are not specifically distinct was made fifty years ago by Schenck ('53). He considered *V. austriaca* as a mere variety of *V. rufa*, bearing the same relationship to the latter as *V. saxonica* is believed by many to bear to *V. norvegica*. This suggestion has lately been revived by Cuthbert ('02), who is struck by the constant association of *V. austriaca* with *V. rufa* in Ireland.

During the last few years, however, the opinion has become established that *V. austriaca* has no workers, but breeds as an inquiline in the nest of some other species. This suggestion as to its habits was first made by Morawitz ('64) and supported by Schmiedeknecht ('81), who, on the ground of its supposed cuckoo-parasitism, proposed a new genus—*Pseudovespa*—for its reception. Holmgren ('83) stated that on an islet of the Baltic off Stockholm he found *V. austriaca* "comme parasite ou invitée chez une congénère *V. germanica*." We may be pardoned for asking on what evidence this statement rests. But the careful observations of Robson ('98) have been accepted as showing clearly the inquiline relationship of *V. austriaca* to *V. rufa*.

For in July, 1887, Robson observed a worker of *Vespa rufa* dragging from a nest the decapitated and mutilated carcase of a queen *V. austriaca*. It was not until ten years later that he recognised this queen as belonging to the latter species. At the time he considered her to be the dead foundress of the *rufa* nest, and this opinion he thought well confirmed, when, having taken the nest shortly afterwards, he discovered no old queen within. There were, however, four newly emerged young queens, and in the cells vacated by them fresh eggs had been laid, presumably by some of the workers. In 1897, having determined as *V. austriaca* the mutilated queen which he had seen dragged out ten years before, Robson made a careful examination of the nest, which he had fortunately preserved. In the central cells of the lower of the two layers of comb, he found six or eight *austriaca* queens, and in the outer cells of the same layer forty males, whose determination was impossible owing to decay. The circumferential closed cells of the upper layer of comb were tenanted by *austriaca* males, while *rufa* males were found in the more internally situated cells.

From these careful observations, then, Robson concluded that the nest must have been founded by a *rufa* queen (because typical males and workers of that species were found in it), and that the *austriaca* queen, which he had seen dragged out, had subsequently invaded the nest as an inquiline "and utilized the energies of the workers of *V. rufa* in rearing her brood of males and perfect females."

The capture on the wing of many male and female specimens of *Vespa austriaca* by one of us, at Fenagh, Co. Carlow, and the discovery, in July, 1902, at the same place of a nest, like that examined by Robson, inhabited by both *V. rufa* and *V. austriaca*, has led us to examine afresh the question of the relationship between these two wasps. We have made a somewhat careful comparison between many individuals of the two forms, especially with regard to the armature and face-markings of the males, and the mouth-parts of the females; and we now publish the main results of our enquiry, together with an account of the nest which was kept for some weeks under observation in a working state. We propose first to recount the facts that we have been able to verify, and then to suggest the explanation that seems to us the most probable.

The characters by which *Vespa rufa* is usually distinguished from *V. austriaca*



are well known to all students of the wasps. The shins of the latter (Plate, fig. xi) are clothed with long hairs not found on those of the former (Plate, fig. 11); and in the female, as pointed out by Thomson ('74), the tarsal segments are broader in *V. austriaca* than in *V. rufa*.<sup>\*</sup> The basal segments of the abdomen in *V. rufa* (figs. 12—15) are broader than in *V. austriaca* (figs. xii—xv). The male armature in *V. rufa* (fig. 6) is broader and darker than in *V. austriaca* (fig. vi), while the ear-shaped process at the end of the stipes has a characteristic form in either species (compare figs. 8, viii). The face of *V. rufa* has a central black anchor mark, and a rather small and narrow yellow crown mark is found on the black area above (fig. 1), while in *V. austriaca* the "crown mark" is large and deep, and the face, almost immaculate yellow (fig. 1) in the male, shows in the female three black specks of varying size (see Cuthbert's figures, 97B). Moreover, the clypeus of *V. austriaca* is decidedly concave on the lower edge (figs. i—v). The scape of the feeler is black in the female of *V. rufa*, and often in the male also (fig. 1), while in *V. austriaca* it has a strong yellow patch in both sexes (figs. i, iii, iv). The black abdominal markings of *V. rufa* are edged by ill-defined reddish areas (fig. 12), while those of *V. austriaca* stand out clearly from the lemon-yellow ground colour (fig. xii). The puncturation of *V. rufa* is coarser than that of *V. austriaca*.

Examination of the large series of these wasps that have passed through our hands shows that most of these characters are fairly constant. In no case have we found any wasp that can be considered as exactly intermediate between *V. rufa* and *V. austriaca*—none that could give rise to hesitation as to which of the two forms it should be placed with. But we have found a number of specimens of *V. rufa* that show very marked variation in the direction of *V. austriaca*, and a smaller number of specimens of the latter that approach in some respects towards *V. rufa*.

Three characters only seem to be absolutely distinctive:—(1) The shins of *V. austriaca* are always hairy; those of *V. rufa* never. (2) The male armature of *V. rufa* is always, as Robson has pointed out ('98), more robust and darker than that of *V. austriaca*. (3) *V. rufa* has the integument more coarsely punctured. All the other characters show more or less variation in different individuals of the two forms, and some of the most striking of these variations will be found figured on Plate.

Taking, in the first place, the head-markings, a black anchor-mark on the face (fig. 1) characterizes *V. rufa*, while the male of *V. austriaca* has typically an unspotted yellow face (fig. i) which shows only the slightest traces of the black dashes that characterize the female. But very extensive variation is to be noticed in both forms. The anchor-mark of *V. rufa* may not reach the edge of the face (fig. 2), or it may become reduced to a central patch (fig. 3), to three minute touches (fig. 5), or to a terminal trident mark (fig. 4). Then, in certain examples of *V. austriaca*, we find that the face shows black marks like those of the aberrant *rufo* males just mentioned (compare figs. 3, 4, 5, with figs. iii, iv, v). Moreover, in some of these aberrant *rufo* males, it will be seen that the yellow crown-mark above the face is larger than usual (figs. 3, 5), while in the aberrant *austriaca* males it is sometimes smaller than usual (fig. v). The edge of the face also is less markedly concave in the black-spotted *austriaca* forms (fig. iii) than in the normal immaculate specimens

<sup>\*</sup> But Thomson's statement (writing of *V. rufa*), "tarsis multo angustioribus," seems to us too strongly expressed.

(fig. i), while in some of the feebly-marked *rufa* forms it is decidedly concave (fig. 5). The scape of the feeler, which in many *rufa* males is entirely black, as in the queens, may show a yellow patch as large as that which characterizes *austriaca* (fig. 3). The males of *V. rufa* vary much more than the females. It is remarkable that no queen or worker of *V. rufa* examined by us shows any trace of yellow on the scape of the feeler, but of twenty-eight queens of *V. austriaca*, five have the usual yellow mark very faint, and in two the scape is entirely black as in *V. rufa*. Further, some *austriaca* queens, taken at Bray by Mr. Barrington during the present year, have a black trident-mark exactly like that of the *rufa* male (fig. 5) referred to above.

Turning next to the abdominal segments, we find that the basal segment of *V. austriaca* is, in many cases, not longer absolutely than that of *V. rufa*, but that it only appears so, because the segment in *V. rufa* is always broader than in *V. austriaca*. Some specimens of the former wasp have, however, the basal segment narrower than usual (fig. 13), and some examples of the latter have it broader than usual (fig. xiii). There is thus a tendency in each of the forms to vary in the direction of the other; yet the narrowest *rufa* abdomen we have measured is broader than the broadest of *austriaca*. Viewed in profile, the front slope of the basal segment in *V. austriaca* is steeper than in *V. rufa*, though here also there is some amount of variation (compare figs. 14, 15 with figs. xiv, xv). We notice that the black markings of the abdominal segments are relatively broader and more truncated in *V. austriaca* than in *V. rufa* (figs. 12, 13, and figs. xii, xiii), but we possess queens of either form showing the abdominal markings of the shape characteristic of the other. In the typical specimens of *V. austriaca*, the black abdominal markings stand out clear and sharp on the lemon-yellow ground; but fully 25 per cent. of the males of this wasp examined by us show a decided rufous tinge around the black, and in some this is so marked that an examination of the shins or the male armature is necessary before the specimen can be satisfactorily determined. On the other hand, some specimens of *V. rufa* show hardly any trace of the rufous tinge.

It is believed by most students of the *Hymenoptera* that the male armature furnishes characters exceptionally reliable for the discrimination of species. In *V. austriaca* the appearance of the organs generally is narrower, more parallel-sided, and paler than in *V. rufa* (figs. 1, i), as was remarked by Robson ('98). Looking at the details of the armature, we find that there is a fairly constant difference in the form of the stipes (fig. 6, vi, *st.*), and that the appendage at its tip is narrow in *V. rufa*, ending in a very slender flexible point (fig. 6, b, fig. 8), but broad and prominent in *V. austriaca*, ending in a straight and more rigid point (fig. vi, b, fig. viii). But in this character, again, there is occasionally a tendency in each species to vary towards the other (compare figs. 9 and 10 with figs. ix and x). And it is of special interest to find that this variation in the armature sometimes (not by any means always) accompanies the variation in the face-markings. Figs. 3 and 9 have been drawn from one aberrant male of *V. rufa*, figs. 4 and 10 from another; figs. iii and ix from one aberrant male of *V. austriaca*, figs. v and x from another. A detail of the armature which seems fairly constant is the process of the inner face of the stipes; this is longer and narrower in *V. rufa* than in *V. austriaca* (figs. 6, a, vi, a, 7, vii), and exhibits very little variation in either form.

If the armature of the males of our native wasps be compared, there can be no

doubt that a very close likeness between *Vespa rufa* and *V. austriaca* is apparent. The armature in these two species is much more alike than in any other two of our wasps, and it differs from that of the ground-building species (*V. vulgaris* and *V. germanica*) more markedly than from that of the tree-building species (*V. sylvestris* and *V. norvegica*). Indeed, taking all points of structure into consideration, few entomologists would hesitate to arrange our six Irish species of *Vespa* into three pairs—*vulgaris* and *germanica*, *rufa* and *austriaca*, *sylvestris* and *norvegica*—and to admit that *rufa* and *austriaca* are much more nearly akin than the two members of either of the other pairs of species.

Much stress is laid by Robson on a supposed constant difference between the mouth-organs of *Vespa rufa* and *V. austriaca*. "The mandibles [of *austriaca*] are," he writes, "smaller and less rugged, . . . and the ligula or tongue is very distinctly smaller than in *V. rufa*." After examination of a number of females of both forms, we can confirm his statement as to a difference in the mandibles (figs. 18, xviii), but the difference is exceedingly slight, the mandibles of *V. rufa* resembling those of *V. austriaca* much more closely than those of any other species. *V. vulgaris* and *V. germanica* have decidedly larger mandibles than our two forms—*V. sylvestris* and *V. norvegica* decidedly smaller. The statement as to the relative length of the tongue is true of some specimens, but in this character a more considerable amount of variation than in others is to be noticed. While the tongue of the female *V. rufa* is, on the average, longer than that of *V. austriaca* (figs. 16, xvi), some specimens of the former have a tongue no longer than that of some examples of the latter (figs. 17, xvii). Indeed, this character, on which it has been proposed to found a generic distinction, is one of the few in which the two wasps show a complete series of connecting links.

Our comparison of the structure and markings of these two wasps shows, therefore, that they are distinct forms which do not merge the one into the other. And yet they are more nearly related to each other than either is to any other wasp, while in most of the characters distinguishing them each shows a marked amount of variation towards the other. A close kinship between the two is certain, but the particular conclusion that we are inclined to draw from the facts will be better appreciated after our examination of the nest has been described.

Early in July, 1902, what was apparently an ordinary *rufa* nest was discovered at Fenagh. It was at the time so feeble that it was left for a while to develop further. By the beginning of August it was fairly strong, and as the previous year's experience had shown that *rufa* nests taken on August 18th and 19th all contained young queens and drones, a common balloon fly-trap was placed over the hole on August 7th. Next day 78 workers, all apparently typical *rufa*, were caught in this trap.

The next day, by again using the trap and by a little thumping on the ground, 4 or 5 more *rufa* workers were extracted, and then all was quiet, so it was decided to dig out the nest. This was soon accomplished, as it was built in exactly the same sort of position as the *rufa* nests found last year, suspended from the roots of grass, and quite on the surface of the ground. Unfortunately, the covering of the nest came to pieces as we were extracting it, but we got out intact the two layers of comb, of which it consisted; these were put on the spot with all the inmates into an insect cage, which was ready for their reception.

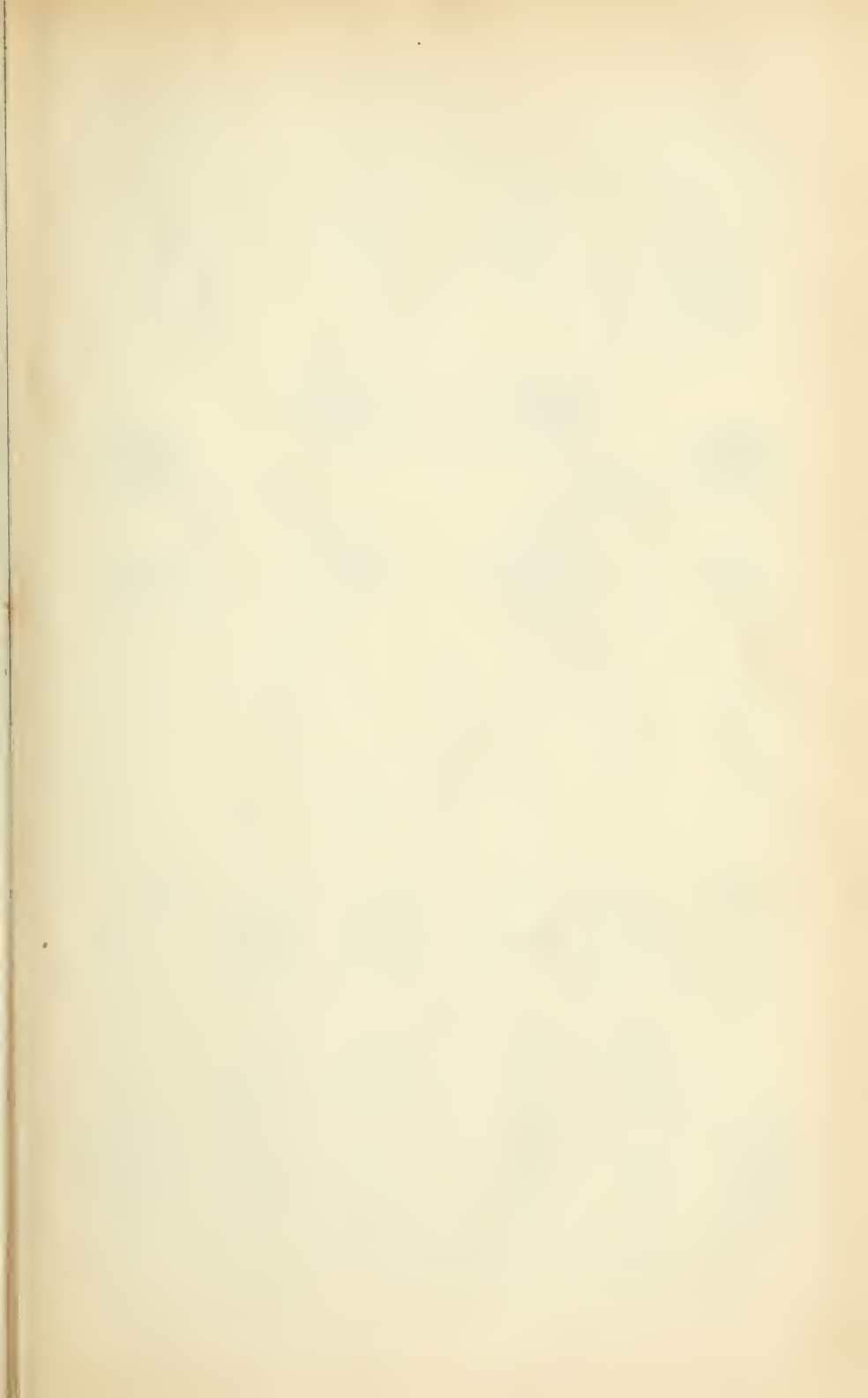
On examining the cavity from which we had just taken the nest, a considerable number of wasps were seen crawling about amongst the *débris*, making no attempt to fly, but burying themselves amongst the scraps of paper, and even burrowing into the earth round the sides. They were all *austriaca* males, and we extracted them one by one from their hiding places, and put them to join their comrades in the insect cage. Amongst them was discovered an *austriaca* queen, which, by her frayed wings and nearly hairless body, was easily recognised as an old one. On further examining the captures there were found two young *austriaca* queens, a large number of *austriaca* males, one *rufa* male, and in the balloon fly-trap five *rufa* workers.

The nest itself was, in general appearance, very like the smaller *rufa* nests found last year, the paper covering being of the same type as in *norvegica* and *sylvestris* nests, but very delicate and thin. The comb consisted of two layers only, of which the upper measured about 3 inches in diameter, and the lower about 2½ inches. In the centre of the upper layer were 16 or 18 empty cells. Round this came an area, containing between 60 and 70 cells, mostly capped, and outside this again came a belt of cells, for the most part empty, but a few that were capped eventually produced *austriaca* drones. The lower layer of comb was composed entirely of large cells, with the exception of a belt round the outside of about 4 cells deep, which contained larvæ, and in which the cells were unfinished. Inside this belt of grubs came a ring of 25 capped cells, most of which contained queens, while in the centre of the comb were 18 empty cells, several of which seemed to have had wasps in them.

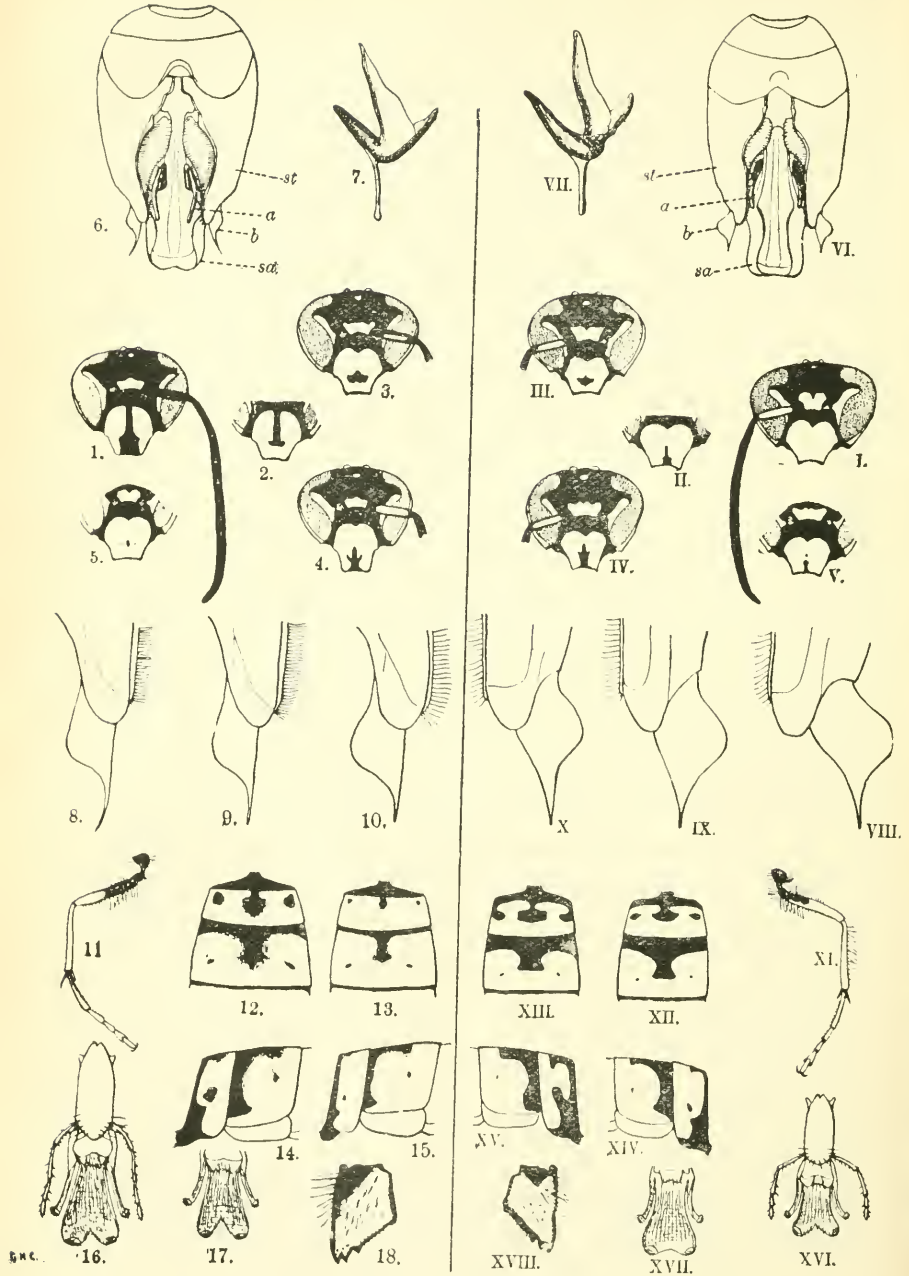
Thus far the nest corresponded very closely indeed with that described by Robson, and it seemed that we had confirmed the view that *V. austriaca* is inquiline on *V. rufa*. We determined, however, to keep the nest under observation, so that as many as possible of the capped cells might hatch out. The five live workers were therefore restored to their comrades, their wings having been first clipped, so that the nest could be examined at any time without risk.

Having supplied them with some honey, we soon had the satisfaction of seeing the workers busily engaged in feeding the larvæ and the young queens and drones. The young queens, too, seemed to take their share of work in feeding the larvæ, first getting their supply of food from the workers. A young queen was never seen going herself to the honey.

During the next week or so queens and drones of the *austriaca* type occasionally emerged from the capped cells, but on August 16th a drone emerged from one of the large cells in the lower layer of comb, undoubtedly referable to *rufa*, but with the face pure yellow, except for a small central black dash, and with yellow spots on the scape of the antennæ. In the course of the next day or two another *rufa* male, very similar, but with three small black dashes on the face (fig. 5), exactly like those that characterize the *austriaca* queen, appeared, and also a male, which was a typical *rufa*. On August 18th, to our great surprise, an apparently typical *rufa* worker emerged from the upper layer of comb. This was the last wasp to come out, and as there were no further developments by August 31st, we killed off all the living wasps and extracted all the remaining pupæ from the capped cells. These yielded a few more distinguishable *austriaca* queens and drones, and also eleven *rufa* drones, but all of the latter varied in face from the typical *rufa* colouring, and showed more or less likeness to the *austriaca* type.







DETAILS OF *VESPA AUSTRIACA* AND *V. RUFA*.



strongly incline us to the view that, although their differences are apparently "specific," there is a direct genetic relationship between them, and that they may be regarded as races of one and the same species. Unless something altogether abnormal happened in the development of the individuals inhabiting one nest, we are forced to that conclusion. For, during the period when the only old queen in the nest was an *austriaca*, there emerged from the cells males of both forms, including specimens of *rufa* varying towards *austriaca*, young queens of *austriaca*, and a worker of *rufa*; and it is especially noteworthy that the latest wasps to emerge, long after the nest was full of *austriaca* queens and drones, were examples of *rufa*. The *rufa* males which hatched out might possibly have been the offspring, produced parthenogenetically, of workers of the same form, but this explanation cannot be put forward for the *rufa* worker, and the fact that some of the *rufa* drones varied so markedly towards *austriaca* makes the explanation very improbable for them. We conclude, therefore, that the old *austriaca* queen was the foundress of the nest, and that both the *rufa* and *austriaca* forms are her offspring. The very interesting observations of Sladen ('99) on the habits of colonies of *Bombus*, suggest that our view is not inconsistent with, at least, an occasional "cuckoo-parasitism" on the part of *Vespa austriaca*. For he states that a queen belonging to the *virginalis*-form of *B. terrestris* often invades the nest of a colony of the *lucorum*-form, kills the rightful queen, and "takes possession of the nest, getting the *lucorum*-workers to raise its young."

In support of our view as to the nature of *V. austriaca*, we hope to obtain evidence at some time of actual nest-construction by a queen of that form in the spring. We can only state on this subject at present, that of twenty-three *austriaca* queens captured at Fenagh in the spring of 1902, six were taken on a Nordmann fir, among a number of other queen and worker wasps which were busily collecting fibre for making their nests, and gathering turpentine from the fir-needles, as is their constant habit. Several observers have called attention to the fact that *V. austriaca* is on the wing later than other wasps. (Cuthbert, '97; Barrington and Moffat, '01). The observations of one of us at Fenagh, however ('03), tends to show that *V. rufa* is also late in appearing, while its numbers increase in those years when *V. austriaca* is most abundant. It has been pointed out that the latter has a more sluggish flight (Gardner, '94), and emits a louder hum (Buckle, '99) than *V. rufa*.

As regards the precise relationship between *Vespa austriaca* and *V. rufa*, we believe that the former represents the ancestral stock of the latter, because *V. rufa* shows distinctly more tendency to vary, while the rarity and discontinuous distribution of *V. austriaca* suggest that it is the older form. Further, we have seen that *V. rufa* shows several points of resemblance to the tree-building wasps, and that this is still more markedly the case with *V. austriaca*. Attention has been drawn (Ormerod, '68; Pack-Beresford, '02) to the fact that the nest of *V. rufa* resembles in texture and construction the nests of the tree-wasps more closely than those of the other ground building species (*V. vulgaris* and *V. germanica*); and that its nest, usually not buried deeply, rests attached to the roots of grasses, in a cup-shaped hollow. It may be concluded from this that *V. rufa* has adopted the habit of building ground-nests rather recently, though it is of interest to note that, at least sometimes, it builds a truly underground nest (Janet, '03). Then we find

that *V. sylvestris*, which habitually builds in trees, occasionally makes a ground-nest (Smith, '58); here apparently we see the beginning of the change in habit which has already been carried far by the *rufa-austriaca* race. In most of the points wherein *V. austriaca* differs from *V. rufa*, it approaches the tree-wasps (*e.g.*, the hairy shins, the yellow-streaked scape); and we see in this further evidence that *austriaca* is to be regarded as the older form. Moreover, as all the workers of these wasps are clearly referable to *V. rufa*, it seems that *V. austriaca* points us back to a time in the history of the race before the worker had become differentiated from the queen. The workers doubtfully referred by Smith to his *V. arborea* ('43, p. 171; Ormerod, '68, pl. 3) might well be considered varieties of *V. rufa* in which the reddish abdominal markings are wanting, while a yellow streak on the scape of the feeler and additional yellow marks on the scutellum are present. Unfortunately he gives no structural details of these workers. Marchal ('96) has shown that, even among our commonest social wasps, a sharp distinguishing line between the two forms of female—the queen and the worker—cannot always be drawn.

Some very interesting problems as to the origin of specific distinctions may, perhaps, be elucidated by the relationship between our two wasps. Their structural differences are quite sufficient to warrant "specific" distinction in the ordinary sense of the term, so that if our view be established, the development of *rufa*-offspring from *austriaca*-parents would be a very striking instance of "discontinuous variation" (Bateson, '94). It would, indeed, furnish an instance in support of Bateson's theory "that the Discontinuity of Species results from the Discontinuity of Variation." We think that we see here a new species arise by the production, through many generations, of an increasing number of individuals (*rufa*-forms) among the offspring, that are markedly unlike the parents (*austriaca*-forms). We believe that *austriaca*-forms give rise to *rufa*-forms, but we have no evidence of the reverse process; and it seems that those specimens of *V. rufa* varying towards *V. austriaca* must be regarded as examples of reversion towards the ancestral type. The slight but constant difference between the male armature in our two wasps illustrates Jordans' ('96) principle of "mechanical selection," and supports Romanes' view ('97, p. 46) that variations affecting the reproductive organs, and tending to prevent intercrossing between an incipient species and its parent form, arise before any striking differences in the general body-structure become developed. These constant differences between the male armature in the two wasps and the absence of intermediate individuals suggest that interbreeding never takes place, and that *V. rufa* can never be "swamped" by crossing with its parent form, *V. austriaca*. Indeed, the latter is now so scarce, that all danger of such "swamping" is past. Except in Ireland and possibly in some mountainous continental localities, it has been almost entirely superseded by its more vigorous and robust descendant.

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## EXPLANATION OF PLATE IV.

Fig.

- |      |   |                        |  |
|------|---|------------------------|--|
| 1.   | Head of typical male <i>Vespa rufa</i> ,                      | face view.             | Magnified 4<br>times. The hairs<br>are omitted in<br>order to show the<br>markings more<br>clearly.                    |
| i.   | " " <i>V. austriaca</i> ,                                     | "                      |  |
| 2.   | Hairs of varieties of male <i>V. rufa</i> , face view.        |                        |  |
| 3.   |   |                        |  |
| 4.   |   |                        |  |
| 5.   |   |                        |  |
| ii.  | Hairs of varieties of male <i>V. austriaca</i> , face view.   |                        |  |
| iii. |   |                        |  |
| iv.  |   |                        |  |
| v.   |   |                        |  |
| 6.   | Armature of typical male <i>V. rufa</i> ,                     | ventral view.          | st., stipes; sa.,<br>united sagittæ;<br>a, b, internal and<br>terminal processes<br>of stipes, Magni-<br>fied 8 times. |
| vi.  | " " <i>V. austriaca</i> ,                                     | "                      |  |
| 7.   | Internal process on stipes of male armature, <i>V. rufa</i> . | Magnified 16<br>times. |  |
| vii. | " " " " <i>V. austriaca</i> .                                 |                        |  |

8.	Extremity of stipes of male armature, typical	<i>V. rufa</i> .	Magnified 32 times.
viii.	Extremity of stipes of male armature, typical	<i>V. austriaca</i> .	
9, 10.	Extremity of stipes of male armature, <i>V. rufa</i> varieties.	<i>V. rufa</i>	
ix, x.			
11.	Third leg of male <i>Vespa rufa</i> .		Magnified 3 times.
xi.	„ „ <i>V. austriaca</i> .		
12, 14.	Dorsal and lateral views of base of abdomen, male <i>V. rufa</i> , to show variation in form and markings.		
13, 15.			
xii, xiv.	Dorsal and lateral views of base of abdomen, male <i>V. austriaca</i> , to show variation in form and markings.		Magnified 9 times.
xiii, xv.			
16.	Labium and tongue of female <i>Vespa rufa</i> .		
xvi.	„ „ „ <i>V. austriaca</i> .		
17.	Tongue (short form) of female <i>V. rufa</i> .		
xvii.	„ (long form) „ <i>V. austriaca</i> .		
18.	Mandible of female <i>Vespa rufa</i> .		Magnified 6 times.
xviii.	„ „ <i>V. austriaca</i> .		
Figs. 1, 6, 8.			
i, vi, viii, xii, xiv.	are drawn respectively from the same individuals.		
„ 3, 9, 13, 15.			
„ 4, 10.			
iii, ix.			
v, x.			

The series of wasps studied in the preparation of this paper as well as the nest described have been deposited in the Dublin Museum.

Dublin Museum and Fenagh, Co. Carlow : 1903.

## HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH *TENTHREDINIDÆ*, &c. (5).

BY THE REV. F. D. MORICE, M.A., F.E.S.

### LYDINI.

In this paper I propose to deal with those genera of Konow's subfamily *Lydini* which are certainly known to me as British, viz., *Lyda*, *Neurotoma* and *Pamphilus*. How to distinguish these is shown in my Table of Generic Characters (*supra* p. 188). Also in *Lyda* the front tibia is armed beneath (nearer to its apex than its base) with a large spine (as long or longer than the calcaria), which in the other two genera is wanting.

When, by examination of the claws, the tibiæ, and the intercostal venation, a specimen has been referred for certain to one of the above genera, its further identification will generally be pretty easy.

1. Of *Neurotoma* we seem to have only one British species, viz., *flaviventris*, Retz. In this the head and thorax are black; the abdomen nearly entirely pale red; the face, the basal joints and under-side of the antennæ, the tegulæ, and the legs yellow. The wings are clear at base and apex, but crossed by a dusky stripe below the stigma. The 3rd antennal joint is about as long as the three next taken together.

The species is known to me from Sussex and the New Forest.

2. Of *Lyda* we have only two species, which may be easily distinguished thus—  
Abdomen dark blue above and beneath; head dark blue in ♂, red in ♀; wings very dusky; 3rd antennal joint as long as the three next taken together...

*erythrocephala*, L.

Abdomen black above, marked beneath with red and yellow; head in both sexes black; wings nearly clear (yellowish); 3rd antennal joint not much longer than the two next taken together.....*stellata*, Chr.

All the specimens of both these whose localities I know for certain are Scotch, but they might probably be found wherever pine woods occur. Stephens records *erythrocephala* from "the West of England."

3. *Pamphilus* is better represented with us. I possess undoubtedly British examples of six species; and Mr. Cameron's Monograph records three others, viz., *betulæ*, L., *stramineipes*, Htg. (which he calls *arbustorum*, F.), and *pallipes*, Zett. Whether our present fauna includes *betulæ* is, I fear, doubtful, as it has not occurred apparently for at least seventy years. *Stramineipes*, taken by Mr. Cameron himself, is in the Natural History Museum at South Kensington. Of *pallipes* he gives two records, viz., "Pitlochry, Alfred Beaumont," and "near Hastings, Bloomfield." These insects I have tried to trace by writing to their captors, but Mr. Beaumont no longer possesses his specimen, and does not know what has become of it. (It does not appear to be at South Kensington). Mr. Bloomfield most kindly sent me his insect, but I saw at once that it was not a *pallipes*, and told him that I believed it to be a ♂ of *silvarum*. Herr Konow, to whom I communicated the specimen, agrees with me in this, and tells me that it = *nigricornis*, Vollenh., and that he was much interested in seeing it, "da die Zusammengehörigkeit beider Geschlechter bisher nicht constatiert war."

Perhaps under these circumstances *pallipes* ought not to be retained in my Tables; but I leave it there as possibly British, though I cannot certify it as such.

The above nine species may be thus tabulated:—

- 1 Third ant. joint as long as or longer than the fourth and fifth taken together .....2.
- Third ant. joint little longer than the fourth.....7.
- 2 (1) Frons (space between ocelli and insertions of antennæ) flattish or swollen, but not divided by a deep furrow into two distinct lateral tubercles. Head above black and yellow, or ochreous with large black markings...3.
- Frons swollen laterally into two well-marked tubercles, separated by a deep though narrow longitudinal sulcus. Head (in ♀) testaceous, with only

a small black mark in the region of the ocelli. (Pronotum, tegulæ, legs, and about five abdominal segments, red. Wings with a large fuscous or yellowish cloud over their discs, generally very conspicuous in the ♀, less so in the ♂).....*betulæ*, L.

- 3 (2) Abdomen above marked with red.....4.

— Abd. above without red markings. (The ♀ has the head, pro-, and mesothorax, ochreous with large black markings. The legs are ochreous with femora black within. The abdomen is black above, yellow at the sides and beneath. The ♂ has the head [except the face] and the thorax nearly entirely black, the abd. and legs as in the other sex)...

*silvarum*, Steph.

- 4 (3) Mesonotum black, with only scutellum and tegulæ yellow. Head above with, at most, a small spot, or a narrow longitudinal streak from eye to oeciput, yellow .....5.

— Mesonotum and head with conspicuous yellow markings besides those above mentioned .....6.

- 5 (4) ♂ with head much narrowed behind eyes; 3rd ant. joint more than twice as long as 4th; all dorsal segments of abd. after the 1st with black bases and reddish apices; venter pure yellow: ♀ with a long yellow streak from eye to oeciput; intermediate dorsal segments of abdomen with only short and narrow discal streaks of red; ventral segments with black bases and yellow (not red!) apices .....*balteatus*, Fall.

(= *cingulatus*, C.).

— ♂ with head little narrowed; 3rd ant. joint only twice as long as 4th; red on dorsum of abd. forming a single broad band (occupying two segments completely and part of another), the remaining dorsal segments black; the ventral reddish: ♀ with only a small yellow triangle between eye and oeciput (no long streak); segments 2-4 of the abd. practically red throughout both dorsally and ventrally; the following segments quite black (no yellow apices to their ventral plates!) .....*hortorum*, Klug.

- 6 (4) Space between ocelli and antennæ, as well as the rest of the head and thorax, largely and conspicuously marked with yellow; dorsum of abd. largely and brightly red.....*depressus*, Schr.

— Space between ocelli and antennæ black. Altogether a darker insect than *depressus*, with less yellow on head and thorax, and the red of abd. duller; also the 3rd ant. joint is a trifle shorter .....*pallipes*, Zett.

- 7 (1) Scutellum yellow; abd. with red and lacteous markings...

*stramineipes*, Htg.

(= *arbustorum*, C.).

— Either the scutellum is without yellow, or the abdomen is unicolorous (violet-black) .....8.

- 8 (7) Abd. with broad red band occupying about four segments; scutellum black; stigma particoloured (yellow base and dark apex!) .....*ininitus*, Vill.

— Abd. entirely violet-black; scutellum yellow; stigma fuscous throughout (not yellow at base!) .....*silvaticus*, L.

Two *Pamphili* in the Stephens Collection have been determined by Mr. Kirby as *latifrons*, Fall., but they seem to me not to have the bituberculate and deeply sulcate frons, which (*teste* Konow) distinguishes that species. I imagine that they are only a form of *depressus*, but see the note in Cam., vol. iii, p. 107.

*Balteatus* (= *cingulatus*, C.). In the Cameron Collection there is a blank space above the label "*cingulatus*." The specimens which should occupy it will be found mixed among those of *depressus*.

*Betula* ♀ is described and excellently figured by Stephens, who says of it "Found at Birchwood\* in July." He describes also its ♂ under the name *aurita*, and says "found near London in June." In his Collection there is a single specimen of each sex (the ♂ ticketed *aurita*), and these were presumably the types of his descriptions. In spite of their great age, the specimens are still in excellent preservation.

*Stramineipes*, Htg. (= *arbustorum*, C.). There is some error, evidently, in Mr. Cameron's account of the antennæ in his description of the species; for it does not agree with the Table which precedes it. I suspect that certain words have been accidentally transposed, and that the description should read "Third joint not much longer than the second, and shorter than the fourth and fifth together," which would agree with the Table and also with the facts. Curiously, also, Mr. Cameron refers to "Figure 7a, Base of Antenna," in Pl. vi of his Vol. ii; but no such figure is to be found in the Plate as published!

In the Cameron Collection there is a single example of the species labelled "Cameron, Rannoch." In this unluckily one antenna is wanting altogether, and the other has lost precisely the joints which are characteristic. Still I think it is certainly a *stramineipes*. Another specimen may be seen in the Stephens Collection, which Mr. Kirby some time ago determined and ticketed as *stramineipes*. In this the antennæ are perfect and unmistakable.

All the species of *Lydini* seem in this country to be rather unfrequent and sporadic in their occurrence. Personally I have most often met with *inanimus* and *silvaticus*; but even these only in isolated specimens, usually flying about rose bushes in gardens.

The supposed British specimens of *Megalodontes* (= *Tarpa*) in the Stephens Collection are, I feel sure, foreigners; and I therefore do not include that genus among our native *Lydini*.

#### HYMENOPTERA ACULEATA IN JERSEY, JUNE, 1903.

BY EDWARD SAUNDERS, F.R.S., &c.

At the end of last May I started for a fortnight's visit to Jersey in hopes of securing some of the earlier Aculeates, which I failed to find in July, 1901 (*cf.* Ent. Mo. Mag., 2nd Ser., xiii, p. 140, &c.). I

\* This locality, I learn from Mr. McLachlan, is in Kent, between Foot's Cray and Farningham. Stephens adds "it has also been taken in Devonshire," but I have reasons for doubting this record.



was rather disappointed with the results of my endeavours, as the species which I expected to meet with, belonging to such genera as *Crabro*, *Diodontus*, *Passalæcus*, *Pemphredon*, and *Odynerus*, in which genera the records from Jersey are singularly scanty, were practically absent, at any rate, remarkably few of them put in an appearance. Of the genus *Odynerus* for instance, of which in Britain we have 18 species, most of which are fairly common, only 2 are recorded from Jersey, and one of these (*pictus*) for the first time now. 7 species are recorded from Guernsey and 3 from Alderney. I thought that probably I was too late for them in July and fully expected that I should be more successful in June, but *parietum* and *pictus* were the only two species seen, and very few examples even of them.

The same may be said more or less of the other genera which one expects to find in June. Of *Crabro* I only saw *elongatulus*, and of *Passalæcus* and *Diodontus* I did not see a single specimen, and although there were fine bramble bushes in some places, all the Aculeates basking on their leaves turned out to be either *Crabro elongatulus* or *Trypoxylon attenuatum*. This latter insect was in the utmost profusion at one spot along the coast, visiting also wild carrot and *Euphorbia*, many examples often occurring on one head of flowers.

The commonest ants in the south of the island are *Formica rufa* and *fusca*, and *Lasius niger*: of the last an interesting form with pale red thorax occurs at St. Ouen's Bay and elsewhere, resembling, if not identical with, the race *emarginata* of the Continent. André says this form has a peculiar musky smell when handled, but I did not observe this in the specimens I captured; *Lasius flavus* curiously enough has not turned up in Jersey, although Luff records it as "common" in Guernsey. The common *Pompili* are *plumbeus*, which occurs everywhere, *chalybeatus* and *fumipennis*; *gibbus*, one of our very common British species, is rare, and *viaticus*, probably our commonest, has not yet been recorded from the Channel Islands at all. June is too late for the spring species of *Andrena*, and these still figure badly in the Jersey list; but I hope some day an Entomologist may be induced to visit the island in April, when no doubt several additional species would reward his efforts. Also there are probably further additions to come from the north and east of the island, of which I know very little, although the experience of them in the one or two excursions I made in 1901 was anything but encouraging.

The best capture I have made in Jersey is of an apparently new species of *Ammophila*, closely allied to *hirsuta*, Scop., which I am now

describing under the name of *Luffii*, in honour of Mr. W. A. Luff, who has done so much towards the investigation of the Channel Islands fauna. I took females of it also in 1901, and at St. Briac in 1899, but I did not notice its characteristics. This year, however, when recording in the Ent. Soc. Transactions (1803, pp. 207, &c.) the *Hymenoptera Aculeata* collected by the Rev. A. E. Eaton and others in Madeira and Tenerife, I alluded to some specimens taken by T. V. Wollaston, and named by Smith "*Maderæ*," Dahlb., as not being exponents of that species, but being probably referable to the var. of *hirsuta* with pale hairs on the propodeum, of which I had taken similar specimens in Jersey and St. Briac in Brittany. Even then I did not notice the structural peculiarities which separate the species. When at St. Ouen's Bay this year, however, I succeeded in catching a ♂ and ♀ *in cop.*, and a careful comparison of the two forms at once revealed excellent differential characters, of which I give the result in this paper. Altogether in this visit about 60 species were noticed, of which the following are additions to my 1901 list.\*

<i>Lasius niger</i> , L., r. <i>emarginatus</i> ?, St. Ouen's Bay.....	J		
<i>Tapinoma erraticum</i> , Ltr., St. Brelades, on the sides of the hill above the Bay .....	J	G	
<i>Ammophila Luffii</i> , n. sp., St. Ouen's Bay .....	J		
<i>Odynerus pictus</i> , Curt., St. Ouen's Bay and St. Brelades.....	J	G	A
<i>Sphecodes reticulatus</i> , Thoms., 1 ♀, Don Bridge .....	J		A
" <i>pilifrons</i> , Thoms., 1 ♀,       " .....	J	G	
" <i>dimidiatus</i> , v. Hag., ♀, several, St. Brelades .....	J	G	A
<i>Halictus albipes</i> , Kirb., ♀, St. Ouen's Bay and St. Brelades .....	J	G	A
<i>Andrena flessæ</i> , Panz., generally distributed, visiting <i>Brassica</i> , &c., taken also by Mr. Luff.....	J	G	A
" <i>rosæ</i> , Pz., r. <i>Trimmerana</i> , St. Brelades .....	J	G	
" <i>angustior</i> , Kirb., St. Brelades, on daisies .....	J	G	A
" <i>helvola</i> , L., ♀ (much worn), St. Brelades .....	J		
" <i>albicus</i> , Kirb., Don Bridge, on <i>Brassica</i> .....	J		
<i>Nomada succincta</i> , Pz., St. Brelades .....	J	G	A
" <i>flavoguttata</i> , K., 1 ♂, St. Brelades.....	J		
" <i>furva</i> , Pz., St. Brelades .....	J	G	
<i>Cœliozyx quadridentata</i> , L., 1 ♀, Bel Royal .....	J		
<i>Osmia aurulenta</i> , Pz., St. Ouen's Bay, taken also by Mr. Luff .....	J	G	A
<i>Melecta armata</i> , Pz., St. Brelades .....	J	G	A

Besides these additional species, I had the satisfaction of confirming four of the species recorded only in Ansted's "Channel Islands," viz., *Andrena pilipes*, Fab., St. Brelades and Bel Royal (probably the *atra* of Ansted); *Osmia rufa*, L., St. Brelades (proba-

\* The letters J G A stand for Jersey, Guernsey, Alderney, as in my former paper.

bly the *cornuta* of Ansted); *Podalirius retusus*, L., St. Brelades; and *Bombus pratorum*, L., St. Brelades; with these additions the number of species now recorded from Jersey amounts to 165, against 104 from Guernsey and 90 from Alderney. Of these 53 are common to all three islands. 75 are recorded from Jersey only, 21 from Guernsey only, and 14 from Alderney only; 22 occur in Jersey and Guernsey but not in Alderney, 16 in Jersey and Alderney but not in Guernsey, and 7 in Guernsey and Alderney but not in Jersey.

The following gives the differential characters of the new *Ammophila*:—

AMMOPHILA LUFFII, n. sp.

*A. hirsutæ simillima, alis hyalinis apicibus solis infuscatis, calcaribus rufo-testaceis, ♂ petiolo subtus pilis tenuioribus fimbriato, sagittarum apicibus minus dilatatis, stipitibus tenuioribus sub sagittis minus recurvatis, ♀ tarsorum anticorum articulis apice externe magis productis, pectine multo longiore, spinis subdilatatis longissimis constructo facile distinguenda.*

♂, distinguished from the British form of that sex of *hirsuta*, Scop., by the slightly clearer more hyaline wings, the less densely hairy head and thorax, the black hairs of which are intermixed with white, the finer hairs on the under-side of the petiole of the abdomen which do not extend under the dilated portion of the segment, the red calcaria, and the much stronger claws. The genital armature differs in having the sagittæ proportionately longer, more slender, and their apices less dilated, and the apices of the stipites more slender and less strongly recurved under the sagittæ.

♀ with clear wings, their apices with a darker band, combs of the anterior tarsi quite differently formed to those of *hirsuta*, metatarsus with five spines instead of four along its outer margin, its apex much dilated laterally on the outer side and bearing two long somewhat flattened spines directed forwards, much longer than the others, in *hirsuta* the apical dilatation bears three much shorter spines, the following joints are also much more dilated laterally than in *hirsuta*, and each bears three long flattened spines at the apex, and two ordinary ones on the side, the spines much longer than the tarsal joints, propodeum more or less clothed with white hairs posteriorly, petiole haired much as in the ♂, calcaria red. Size about equal to that of *hirsuta*.

St. Ann's, Woking:

September, 1903.

PHORTICA VARIEGATA, FALL.: A DROSOPHILID FLY NEW  
TO BRITAIN.

BY D. SHARP, M.A., M.B., F.R.S.

On June 26th my daughter, M. A. Sharp, captured near Brockenhurst a Dipteron which we recognised as something we had not seen before, and which Mr. C. G. Lamb made out by the aid of Schiner's

invaluable work to be *Phortica variegata*, Fall. For several days we were unable to find another example, but about ten days later Mr. Lamb captured a second specimen several miles from the spot where the first example was discovered. Both individuals were found about old wood, and the species probably feeds on some fungus connected therewith.

*P. variegata* is large for a Drosophilid, and is easily recognised by the complexly mottled legs; these parts are of the pale tint so usual in *Drosophilidæ*, but in addition to this are greatly spotted with dark brown, somewhat after the same fashion as the variegate legs of *Milichia ornata*. The abdomen is banded with dark colour as it is in many other *Drosophilidæ*, but in *P. variegata* the dark marks are very large.

Mr. Collin has suggested to me that the correct name of this species will probably prove to be *Amiota variegata*. He considers the two names to be synonymous, and *Amiota* to have two years' priority. I have, however, failed as yet to find any description of *Amiota*. *Phortica* was established by Schiner in 1864. *Amiota* is given in Sendder's and in Marshall's Nomenclators as due to Loew in 1862. Marshall's entry is a curious one, viz., "*Amiota*, Loew, Berl. ent. Zeitschr., vi, 229, 1862, = ? *Drosophila*." In the volume thus indicated Loew describes two new North American species of *Amiota*, but makes no remark whatever about the genus. We may therefore suppose that the genus was either established previously to this, or that he forgot to deal with the generic characters. Very likely Mr. Collin, who has so extensive a knowledge of our Acalyptrate *Muscidæ* may before long be able to clear up this nomenclatorial point.

In Williston's work on North American *Diptera* there is no mention of the genus *Amiota*, but *Phortica* is recognised as a North American genus.

Cambridge: August 29th, 1903.

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#### ON SOME COLEOPTERA FROM THE FARÖE ISLANDS.

BY D. SHARP, M.A., M.B., F.R.S.

In the Entomologist's Monthly Magazine, 1901, p. 254, I gave an account of a small collection of beetles made by Mr. Nelson Annandale in this remote group of small islands. This was followed by a note from Dr. O. M. Renter, of Helsingfors (*op. cit.*, 1902, p. 3), in

which was detailed what was previously known on this subject. Dr. Reuter's summary is of considerable value, as it gives the sources of the information.

I have now received another small collection from Mr. Annandale made in the second week of August of this year in two localities of the islands, and I give below the results, mentioning the two localities separately. The number of specimens of each species is indicated after the name.

THORSHAVN.—*Notiophilus biguttatus* (3), *Nebria brevicollis* (4), *N. Gyllenhali* (1), *Loricera pilicornis* (1), *Patrobis excavatus* (5), *Agabus bipustulatus* var. (2), *Quedius umbrinus* (1), *Q. fuliginosus* (1), *Othius melanocephalus* (1), *Lesteva bicolor* (1), *Cryptophagus scanicus* (1), *Cryptohypnus riparius* (2), *Barynotus Schonherri* (1).

NAALSOE.—*Notiophilus biguttatus* (1), *Carabus catenulatus* var. (1), *Nebria brevicollis* (30), *N. Gyllenhali* (94), *Calathus cisteloides* (6), *C. melanocephalus* (9), *Amara aulica* (2), *Pterostichus vitreus* (3), *Dichirotrichus pubescens* (22), *Bradycellus cognatus* (5), *Patrobis septentrionis* (15), *P. excavatus* (12), *Trechus obtusus* (5), *T. lapidosus* (1), *Megasternum boletophagum* (3), *Tachinus pallipes* (1), *Quedius umbrinus* (1), *Omalium rivulare* (2).

In all, therefore 23 species, of which the following are new to the Fauna, viz., *Dichirotrichus pubescens*, *Bradycellus cognatus*, *Trechus lapidosus*, and *Tachinus pallipes*. There is only one specimen of the latter species, and it is not in good preservation, so that confirmation of this record is desirable. We do not know enough of the Fauna as yet to enable us to deal with the question of variation and other matters of biological interest. It will however be of considerable interest to examine the question of flightlessness. From that point of view the *Patrobi* will be of special interest, as in this genus the wings are in different stages of atrophy according to the species. Do these insects correspond in the extent of this atrophy with the same species on the mainland?

The discovery of *Dichirotrichus pubescens* is quite unexpected. On the mainland it frequents the estuaries of rivers. No such habitat is possible for the species in these islands, and Mr. Annandale informs me that it is found at Naalsole under stones on the moors.

Out of the 23 species in this collection, four—as already stated—are new to the Fauna of the islands. This addition brings the number of species of *Coleoptera* ascertained to occur there up to 79. I shall not be surprised if the number of species actually in the islands will ultimately prove to be as many as 200. A resident Naturalist who can take advantage of good weather at different seasons is essential to the acquisition of complete knowledge on this point.

Cambridge : September 3rd, 1903.



AN EXCURSION TO THE NORFOLK BROADS PRINCIPALLY IN  
QUEST OF *ODONATA*.

BY G. T. PORRITT, F. L. S.

For several years it had been strongly on my mind to make an expedition to the Norfolk Broads, with a view to turning up, if possible, *Æschna isosceles* (*rufescens*), and a note by Mr. H. M. Edelsten (Entom., February, 1903, p. 50) stating that he was practically certain he had *seen* a specimen of the species there last July, settled the matter. In company with Mr. T. A. Lofthouse, of Middlesbrough, I arrived at Stalham on the evening of June 17th, and we remained there until July 2nd, the Rev. Cyril D. Ash, of Skipwith, joining us from June 22nd to June 27th.

My two friends went solely as Lepidopterists, but they assisted me splendidly in my hunts after the Dragon-flies; indeed, had it not been for Mr. Lofthouse's management of the boat, whilst I used the net, it is not unlikely that *Æschna isosceles* would not have been taken at all. We were evidently at first too early for this species, and as day after day passed with no sign of either it or *Libellula fulva*, I began to lose hope of seeing either of them. On June 29th, however, Mr. Lofthouse netted two fine adult male *L. fulva*, and a number of others were seen; so next morning we set out in great hopes of securing a series of this species. Nor were we disappointed, for it proved to be quite common. Whilst we were working for it I noticed a large *Æschna* hawking on the river along the side of a reed bed, which I at once felt sure could be no other than *isosceles*. Needless to say that from that time *L. fulva* was largely neglected and our energies concentrated on the *Æschna*, of which several others were soon seen to be flying about; at length one was netted, and proved to be the prize we anticipated. Hard work during the remainder of the morning only produced one more, but our captures fortunately included both sexes. Next day during six or seven hours on the water, entirely devoted to stalking *Æ. isosceles*, I netted four more, one of which unfortunately escaped. We never saw the species away from the large reed beds, nor on ground which could be reached on foot; and as an *Æschna* is not the easiest of creatures to catch even on *terra firma*, it will be realized that as all were stalked with, and netted from, a small boat, their capture proved as exciting a piece of entomological work as I have ever experienced. Probably during the two days we saw over thirty specimens, and I had little doubt it would become still more plentiful after we left next day.

Of *Libellula fulva* we probably saw fully a hundred examples, the great majority of which were adult blue males, certainly not more than half a score females being noticed in all! This species also frequented the river and adjoining wide reaches, but we saw it over a much wider area than we did *Æ. isosceles*, which indeed we only found on about a mile of water.

*Orthetrum cancellatum* was plentiful, but seemed to avoid the river, and occurred on the dry grounds away from the water, where it was a comparative easy capture. Of less noteworthy species—*Brachytron pratense* and *Libellula quadrimaculata* were both plentiful. *Erythromma najas* I believe would have been common had we worked for it; whilst *Agrion pulchellum* was by far the most abundant Dragon-fly seen, occurring in plenty apparently everywhere. *Pyrrhosoma nymphula (minium)* and *Ischnura elegans* scarcely need mention.

Of *Planipennia* only a few common species were taken; but among *Trichoptera* a local species occurred in *Erotesis baltica*, hitherto, as far as I know, only recorded in Britain from the Cambridgeshire Fens. Another interesting one was *Limnophilus xanthodes*, which proved to be nearly the most abundant species noticed, three or four would fly at one time out of bush after bush at the strokes of the beating stick. Other species included *Phryganea grandis*, *Colpotauius incisus*, *Grammotaulius atomarius*, *Limnophilus flavicornis*, *L. marmoratus*, *L. luridus*, *L. sparsus*, *Trienodes bicolor*, and *Holocentropus picicornis*, most of them in plenty.

My friends worked hard among the *Lepidoptera*, but with poor results, as for some reason sugar and light were both unproductive. *Papilio Machaon* was abundant, *Arctia urticae* came fairly freely to light, and *Hydrelia unca* was constantly disturbed as we walked about. Other species included *Smerinthus ocellatus*, *Chærocampa Elpenor*, *Nudaria senex*, *Acidalia immutata*, *Timandra amatoria*, *Eupithecia valerianata*, *Collix sparsata*, *Lobophora sexualisata*, *Melanthia albicillata* (about the wood), *Leucania pudorina*, *Axylia putris*, *Dipterygia pinastri*, *Mamestra anceps*, *Apamea unanims*, *Dianthæcia cucubali*, *Hadena suasa*, *Hypenodes costastrigalis*, *Herminia cribralis*, *Paraponyx stratiotalis*, *Chilo phragmatellus*, *Schænobius mucronellus*, and many others.

Huddersfield: August 17th, 1903.

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*Coleoptera in the New Forest.*—As this season has been an acknowledged bad one for *Coleoptera*, I think a few species I took in the New Forest are worth recording. I managed to get away for two days at the very beginning of August, but as it was my first visit to the Forest, and I was alone, I spent the greater part of my time wandering about rather aimlessly. I chiefly worked old tree stumps and small puff balls growing on them. In the puff balls I found *Aspidiphorus orbiculatus*, Gyll., common, and also took four *Enicmus testaceus*, Steph., and two each of *Sphindus dubius*, Gyll., and *Liodes orbicularis*, Herbst. Sitting on old logs I took single specimens of *Leptura scutellata*, F. (of which I found many old remains in one log), and *Tillus elongatus*, L.

Under bark I found about twenty *Plegaderus dissectus*, Er., six *Paromalus flavicornis*, Herbst, and one each of *Scydmanus exilis*, Er., *Mycetophagus piceus*, F., *Ips quadriguttata*, F., *Thymalus limbatus*, F., and *Quedius ventralis*, Av. *Ditoma crenata*, F., *Cerylon ferrugineum*, Steph., *Plinella denticollis*, Fairm., *P. aptera*, Guér., and *Philonthus splendidulus*, Grav., were all common in the same situation. One specimen of *Epurea decemguttata*, F., was taken at a *Cossus*-infected tree, and *Mycetoporus punctus*, Gyll., and *Ptilium marginatum*, Aubé, also turned up, the latter by sweeping very short grass in the evening.—NORMAN H. JOY, Bradfield, near Reading: September 2nd, 1903.

*Coleoptera at Rannoch*.—Having recently spent a fortnight at this Mecca of entomologists, a record of my captures may possibly be of interest. The weather, however, was very much against me. During the whole of my stay we had no single day without rain, and seldom saw the sun at all, while there was also a good deal of easterly wind, which rendered sweeping almost impossible. Quite apart from this, however, I can emphatically endorse Mr. J. J. Walker's statement (cf. Ent. Mo. Mag., ser. 2, vol. xi, p. 21) to the effect that the Rannoch district is a difficult one to work. The good things are there, but most certainly they do not tumble into one's killing bottle; and without a bicycle one would be terribly handicapped.

*Carabida* were not very plentiful. I took seven specimens of *Carabus glabratus*, however, not on the mountains, but strolling about in broad daylight in one particular pathway in the Black Wood. Mr. Donisthorpe, who was with me on one occasion, took another. The only other species of the genus met with was *C. catenulatus*, a good deal more brightly coloured than is usual with southern examples. *Trechus rubens* turned up in a sawpit on the Struan road, and I got a single *Patrobis septentrionis* under a stone near the bank of the Loch. *Bembidia* were represented by a single *B. femoratum*, and I saw no *Anchomeni*.

*Hydradeephaga* were decidedly scarce. I could only find one or two pools which it was possible to fish, and even from these I did not get more than a couple of dozen beetles altogether; quite half of these were *Haliphus fulvus*, very dark in colour. Three or four *Agabus chalconotus* turned up, and four *Hydropori*, belonging to as many species, *decoratus*, *Gyllenhali*, *atriceps*, and *obscurus*. The only noteworthy example of the *Hydrophilida* was *Hydrana pygmaea*, under a stone in a burn.

Among the *Staphylinida*, *Quedionuchus laevigatus* was abundant under the bark of decaying logs in the Dall sawpit, and *Quedius xanthopus* under that of felled pines on the opposite side of the Loch, the spot, apparently, where Mr. Walker found it. Nothing else of any note turned up, save *Stenus Gynemeri* in a mossy stream, and a single *Tachinus elongatus*, which a Lepidopterist brought me from the summit of Schiehallion.

*Liodes glabra* was fairly common under the bark of some pine railings near the entrance to the Black Wood, and also on logs in the sawpit. A single *Silpha nigrita* was crawling on the road close by. On the famous *Cossus*-infested tree in the Black Wood *Cetonia floricola* was to be taken in numbers; on one occasion sixteen specimens were all huddled together in a space that could almost be covered

by the palm of my hand. There was nothing else on the tree but a host of *Soronia punctatissima*, and two or three *Rhagium inquisitor*, which strolled about in their usual lordly manner, but did not seem to touch the sap.

Under chips in the Dall sawpit I got half a dozen *Eros aurora*. Decaying logs were plentiful; but as a rule there was nothing in them. The one exception was a birch log, from which I got a dozen pupæ of *Trichius fasciatus*; they are very easily injured, however, for they lie, as a rule, up against the bark, which can scarcely be removed without bruising them. So only eight specimen hatched out, one of which was hopelessly crippled. I also brought home a number of Lamellicorn larvæ from the same log, which may or may not belong to the same species, and which may or may not come to maturity.

*Elateridæ* were very scarce; but I got a single *E. nigrinus* from a fir log in the Black Wood. The only *Telephori* of any note at all were *T. figuratus*, which was common, and *T. obscurus*, of which I took three. Four *Rhyncolus chloropus* were hiding under the bark of a fir stump. *Longicornia* were represented (in addition to *Rhagium inquisitor*) by *Asemum striatum*, of which I took a specimen on a recently-felled log while Mr. Donisthorpe caught another flying, and by a single *Rhagium indagator*; but I think that I was too early for the latter species. *Chrysomelidæ* were almost entirely absent.—THEODORE WOOD, The Vicarage, Lyford Road, Wandsworth Common, S.W.: July 30th, 1903.

*Xylophasia polyodon* (grey var.) in the Isle of Wight.—On August 1st of this year I took a specimen of this rare variety at sugar in the grounds. The large white patch at the anal angle of the fore-wings is very finely developed, and the markings are very dark and distinct.—G. RENDEL, Broadlands, Sandown, Isle of Wight: August, 1903.

*Catocala fraxini* in the Isle of Wight.—In November, 1900, a terribly worn specimen of this scarce moth was taken in the town here by a friend of mine. It is now in my cabinet.—ID.

*Scarcity of Colias Edusa* in 1903.—The scarcity this year of *C. Edusa*, L., may well be cited in evidence of this species being a colonist in England. During the period of its usual appearing, the prevalent winds have been adverse to its coming here from France. At Seaton I have seen no more than a solitary male once this summer; this was on the morning of August 4th, when a south-westerly breeze had been blowing for about a day.—A. E. EATON, Woodlands, Seaton, Devon: September 10th, 1903.

*Note on Eupitheciæ* (see Ent. Mo. Mag., ser. 2, vol. xiv, p. 199).—At Mortehoe *T. pulchellata* is met with as frequently in the imago as in the larva state. Not so *T. linariata*, of which the larvæ are common, but I have never come across the perfect insect. *T. castigata* is pretty frequently, *T. absynthiata* rarely, beaten out of hedges; both are very common here in the larva state.—G. B. LONGSTAFF, Twitchen, Mortehoe, R. S. O.: August 28th, 1903.



*A structural point in some Satyrids.*—I have not seen the following noted in the books. In *E. Janira* the principal veins of the hind-wing are very prominent on the under-side, but the wings are *nearly* flat. In *P. Egeria* the portions of the wing between the veins (more particularly towards the hind margin) are strongly convex upwards, so that the edge of the wings is distinctly fluted; as a consequence of this, when the wings were placed together in repose, the two hind-wings came into contact only at the convexities between the veins, leaving a series of somewhat diamond-shaped spaces. *P. Megara* and *E. Tithonus* occupy an intermediate position in this respect: I should think that this formation of the hind-wings helps to conceal the insect when at rest among leaves. It certainly adds to the grace of a very elegant butterfly.—ID.

*Leaf-cutting Bees and "Geranium" flowers.*—A large portion of my small greenhouse has always been devoted to the culture of "zonal" Pelargoniums, of which I have considerable variety. This year, for the first time, leaf-cutting Bees (probably *Megachile*) have discovered that the petals are suited to their requirements. Ordinarily, I believe, it is the "scarlet" varieties that are attacked, but in my case it was not so. No variety with red, pink, purple or salmon flowers has received attention; the greatest sufferers are the "whites," and one very large-flowered "single white" has its petals reduced to shreds by the characteristic excisions; other varieties attacked are a very pale lavender, and one that may be termed whitish with a pale salmon "eye" (I purposely omit "florists'" names), white predominating in both. Had the "reds" been attacked it would not have occurred to me to publish this note, but as the matter stands at present I think it may be of interest to do so. I can offer no suggestion as to the reason for the preference, nor for the fact that outdoor window and bedding "reds" are, with me, equally neglected.—R. McLACHLAN, Lewisham, London: *September 4th*, 1903.

*Loxocera nigrifrons*, Macq., confirmed as British.—I am glad to be able to remove the slight doubt that exists as to this species being a British insect. Mr. Austen, in his Revision of the genus (Ent. Mo. Mag., 1899, p. 67) tells us that he includes the species on the faith of two specimens captured by Mr. J. C. Dale at Lyndhurst about 70 years ago, viz., on June 1st, 1831, and July 7th, 1837. The species consequently stands in italics in Mr. Verrall's "List" as being in need of confirmation. This has been amply obtained this year, as the species was found near Brockenhurst in the second half of June by Dr. Jenkinson, Mr. C. G. Lamb, Miss M. A. Sharp, and myself. Although each of us obtained one or two specimens, the insect appears to be very rare. All were obtained in one short path which we frequented a good deal, in consequence of its having been the habitat of the specimen of *Nephrocerus flavicornis* recorded by Dr. Jenkinson, p. 227 in the current No. of this Magazine.—D. SHARP, Cambridge: *September 1st*, 1903.

## Obituary.

*Edward Robert Dale*, who came to a tragic end at Salisbury on August 13th, was the younger son of James Charles Dale, M.A., F.L.S., who died in 1872 (Ent. Mo. Mag., vol. viii, p. 255). Mr. E. R. Dale was in his younger days an ardent entomologist. His captures of *Sterrhia saccharia* and *Deilephila livornica* at Glan-



villes Wootton were recorded by his father in Ent. Mo. Mag., vol. iv, p. 114, and vol. vii, p. 139; he also took *Sirex juvenus* and *Leptomorphus Walkeri* at Glanvilles Wootton, and inserted a notice of his capture of the former in the Entomologist, vol. xxii, p. 17. Since his wife's death in 1892 Mr. Dale lived at Salisbury and established a business as electrical engineer, which he hoped to bequeath to his son. About a fortnight before his death he had to give up his workshop, and took a very inferior and out of the way building, which, with his financial unsuccesses, completely upset his equilibrium. He was the patentee of a few inventions, among which may be mentioned an electrical lamp which might be used for mothing purposes. He has left his mother's collection of shells and his own collection of coins, fossils and nests to his son, and his father's collection of foreign butterflies to his daughter. The ultimate destination of the latter collection is unknown, but it may be mentioned that it contains some arctic insects taken by Capt. Ross, and figured by Curtis in the Appendix of Ross's work.—C. W. DALE.

*William Duppa Crotch, M.A., F.L.S.*, died at his residence, Asgard, Richmond, Surrey, on August 25th, aged 71. His name was familiar to the readers of the "Intelligencer" as an enthusiastic student of *Lepidoptera*, varied by *Coleoptera* and *Hemiptera*. We think he studied for the medical profession, but, finding it distasteful, did not qualify. He was perhaps best known as the brother (a year or two junior) of G. R. Croteh, whose premature death in 1874 was a great loss to Coleopterology; cf. Ent. Mo. Mag., vol. xi (1874-75), pp. 70-72. In their early days the two brothers made several lengthy expeditions together. Later on he married a Swedish wife, and settled in Scandinavia, apparently doing very little entomologically, but occupying himself with an exhaustive study of the lemming and its migrations, the results of which were published.

*Prof. Augustus Radcliffe Grote, A.M.*—We have information to the effect that this well-known Lepidopterist died at Hildesheim on September 12th after a long and painful illness. A more detailed notice will follow.

*Samuel James Wilkinson* died at Lilleshall Road, Clapham, on September 16th, in his 88th year. Half a century ago he was known as a diligent collector and observer of *Lepidoptera*. In the "Entomologist's Annual" for 1855 (ed. ii), the late Mr. Stainton made an offer for the MS. of a work on the British Tortrices. What replies were received to that offer we know not, save that one by Mr. Wilkinson was entertained, which came before the entomological public somewhat as a surprise, as the proposed author had not previously shown any aptitude for descriptive and systematic work. "The British Tortrices" appeared in 1859. It was not very favourably received at the time; to some the (acknowledged) want of synonymy and bibliography was a great disappointment; to others the work was in advance of the times, for the employment of neurion, &c., in generic limitation in Tortrices, was beyond the sphere of those British entomologists who could not conceive that anything of importance lay concealed beneath the scales. The descriptive matter was original, detailed, and accurate. The author showed he had in him all the requirements necessary, excepting those of bibliographical research, and keeping in touch with what had been done, and was being done, beyond our own shores. Mr. Wilkinson had not been heard of by us for so many years that information as to his decease a few days ago, at a venerable age, came quite unexpectedly.—R. McL.

## Review.

"A LIST OF NORTH AMERICAN LEPIDOPTERA AND KEY TO THE LITERATURE OF THIS ORDER OF INSECTS. By HARRISON C. DYAR, Ph.D., Custodian of Lepidoptera, United States National Museum, assisted by C. H. FERNALD, Ph.D., the late Rev. GEORGE D. HULST, and AUGUST BUSCK. Bull. U. S. Nat. Mus., No. 52. Washington: Government Printing Office. 1902." (8vo, pp. xix + 723. Species 6622).

This List supplies a need which has been greatly felt by all students of the *Lepidoptera* of North America. As Staudinger and Wocke's Catalog has done more than any other work in aiding and regulating the study of our European forms, so this List, which is something more than an equivalent for it in America, cannot fail to have at least as great effect upon the progress of Entomology across the Atlantic. When we say that it is something more than a mere equivalent, we refer to the manner in which it is brought out, the excellent printing and ample spacing, the well-arranged and quickly visible index, the care with which erroneously spelt names are mentioned in the synonymy of the species rather than being allowed to drift at the disposal of future writers, and especially to the great contrast in favour of the American method which is to be found in the printing under each generic name the principal synonyms which may be regarded as wholly or partly its equivalents, and the citation under families of the monograph relied upon for their classification and synonymy.

Here indeed is a very distinct improvement upon Staudinger's Catalog, and a welcome return to the system adopted by Stephens and Stainton. There can in future be little excuse for the resuscitation of superseded nomenclature, except for good cause shown, if further evidence should become from time to time available.

It is satisfactory to observe that the obvious intention of the authors throughout has been faithfully to regard the Law of Priority, and although some individuality is to be recognised in the methods adopted by the compilers of different portions of the List, the truth seems to be now recognised that no finality is to be obtained by any other method than that of crediting to each author in order of precedence whatever original work he can be shown to have achieved. It is greatly to be hoped that the excellent example set in this respect will be largely and consistently followed by future workers in all branches of Natural Science. The authors are to be congratulated that the results arrived at in these respects have not involved the amount of labour which would undoubtedly be required on the part of any one dealing with the far more extensive literature of Europe on these subjects, and their success emphasises the regret that must now be felt that none of the older European authors had the courage to attempt a complete revision at a date when priority of nomenclature could have been more easily established before the majority of the old types had been lost or dispersed.

Some apparent inconsistencies to be found in this List are attributable to the different methods employed by each individual compiler in fixing the types of certain genera. One system which has been somewhat largely used in the past has been to regard the first of the species enumerated under any generic name as the type of the genus. I am unable to say how far this has been the case, if at all, in the earlier parts of the work, but in that part attributed to Dr. Fernald, or in which he has been followed by Dr. Dyar, it has evidently been adopted. In spite of the

undoubted simplicity and consequently tempting facility of the system, its convenience is more than doubtful. There are too many pitfalls for the unwary on this attractive path! Thus (p. 495) Dyar following Fernald adopts *Orechemia*, Gn., for its first exponent *diana*, Hb., failing to observe that the name *diana* is preceded by a small asterisk, the meaning of which is, to quote Guenée's own words [Ann. Soc. Ent. Fr., XIV (2 s., III), 131, Ind. Meth., IV (1845)]:—"Le signe,\* placé en tête d'une espèce, indique que je n'ai pas vu l'insecte en nature, ou que je n'ai pu l'étudier suffisamment." The type of a genus must be at least a species which clearly exemplifies the characters attributed to that genus, and therefore sufficiently illustrates the author's conception when creating it. Guenée's conception of the genus *Orechemia* can scarcely be illustrated by a species which he had not seen or not sufficiently studied, therefore his type must surely be found among others therewith included; but in this case Guenée names two species only, and the choice of a type is thus restricted to one which he had, or one which he had not, studied. If Dr. Fernald will forgive my intrusion into the domain of his special field of most useful and conscientious work, he will thus find himself constrained to recognise as the type of *Orechemia*, No. 2223 (Stgr.-Rbl. Cat.) *Grapholitha* (*Laspeyresia*) *gallicana*, Gn., which he would probably refer to his present idea of *Enarmonia*, Hb. (*Tortricidæ*).

My *Carposina crescentella* (No. 5475) is in Dr. Fernald's collection; perhaps he may be able to supply the locality.

No one can feel more deeply indebted to the authors of this new List than a fellow-worker like myself, who at an almost prohibitive distance must be dependent on them for such information as can enable him to pursue his studies, and who has never appealed to them in vain.

In their yearning for truth, the only aim of all scientific research, I am confident they will accept any fair criticisms in the same friendly spirit in which they are offered, and there need be no hesitation on my part in calling attention to some minor points in which this Catalogue seems capable of improvement:—

Page 353—*Solenobia* is here wrongly treated as a Macro-Psychid, and included between *Chalia*, Moore, and *Hyaloscotes*, Btl.; it cannot truly be separated from that portion of the *Psychidæ* which should be regarded as true Micros.

*Solerobia*, Dp., HN. Lp. Fr. Sppl. IV, 197, 201, 428-30, 512 (1842): Cat. Lp. Eur., 358-9 (1846). These references are omitted, and the genus erroneously attributed to Zeller who adopted it from Duponchel in 1852.

Pages 364-371—The *Sesiadæ* (*i. e.*, *Ægeriadæ*) are here inserted between the *Cossidæ* and *Pyralidæ*. This is one of the instances mentioned in the preface, where the system adopted differs from that of Meyrick, who placed them, perhaps more justifiably, in the *Tineina* preceding the *Gelechiadæ*.

Beutenmüller's erroneous use of the name *Sesia* has been followed, and *Ægeria* should be substituted. Of this more anon!

Pages 489-495—Another instance of departure from Meyrick's classification is that of the *Hyponomeutidæ*, which he placed between *Elachistidæ* and *Tineidæ*, while Dyar places them between *Gelechiadæ* and *Tortricidæ*, which are followed by *Æcophoridæ* and *Blastobasidæ* before *Elachistidæ* come into the line. If we regard these latter as narrow-winged *Hyponomeutidæ*, are we not justified in uniting the two families, placing the *Tortricidæ* between the *Hyponomeutidæ* and the *Tineidæ*?

I take this opportunity to disclaim the authorship of "*Blastobasidæ*," attributed to me by Staudinger and Rebel; I adopted it from Meyrick (Tr. Ent. Soc. Lond. 1894, 22).

On page 450 Dr. Fernald rightly follows Professor Zeller in giving neuter terminations to the names of all species placed under the genus *Exartema*, Chms., but on pp. 478-81 he adopts feminine terminations under the genus *Archips*, Hb., whereas the Greek word  $\psi$  is masculine, and the early worms should thus be all of the male gender.

Although conservatism must be gratefully acknowledged so far as it applies to the true principles of priority, it is a matter for regret that some effort has not been made to correct at least the more flagrant of those ill-formed names, for so many of which Mr. Chambers was unfortunately responsible. Without multiplying instances I take, for example, the two names that first occur to me, No. 6117, *æsellæ*, Chmb., No. 5990, *æneusella*, Chmb.; the genitive of *æ*s is *æ*ris, the name should therefore be *ærellæ*, and *æneella* should supplant the equally unallowable *æneusella*. Again, there are many instances of the termination *ella* being affixed to genitives ending in *æ* without the elimination of its thus offensive superfluity, e. g., 5780, *ambrosiæella*, Chmb.; 5781, *amorphæella*, Chmb., &c. A specially favourable opportunity for such necessary emendations appears to have been neglected, although in what professes to be only a "List" this would perhaps scarcely come within the scope of the authors' intentions. If it be contended that these corrections are not permissible on principles of priority the question may be open to discussion, but this view is certainly open to protest.

The authors seem to be thoroughly justified when they include in their synonymy errors of spelling in subsequent quotation of original nomenclature (whether printers' or authors' errors), the effect of which so far must be to prevent the mistaken use in the future of these wrongly printed or quoted names, but it is to be regretted that when such names have been corrected they are in this List not unfrequently restored, the corrections being treated as synonyms, e. g., on the same page (555) No. 6310, "*tiliæcellæ*, Chambers," corrected to "*tiliellæ*," in which case it may be observed that a further synonym is created, as Chambers did not print "*tiliæcellæ*" but "*tiliacellæ*." No. 6315, "*mariæellæ*, Chambers," corrected to "*mariellæ*," here my original correction in "Insect Life" is not quoted. No. 6318, "*castanæællæ*, Chambers," corrected to "*castanellæ*," and No. 6316, "*tritaniellæ*, Chambers," in which case to be perfectly consistent, the name should have been as originally spelt, "*tritæniæanellæ*," and the other EIGHT different ways in which Chambers himself subsequently spelt the name (*tritæneanellæ*, *tritæneanellæ*, *tritæniæanellæ*, *tritæniæanellæ*, *tritæniæanellæ*, *tritæniæanellæ*, *tritæniæanellæ*) might have been quoted. The spelling as now adopted has not even the recommendation of its own author's personal preference, expressed [Can. Ent., V, 173 (1873)] for "*tritæniæanellæ*," although it may certainly be welcomed as more correct and as a hopeful sign that real emendations must eventually secure acceptance. In this connection, p. 492, No. 5502, "*albopalpellæ*, Chambers," syn. "*albopalpellæ*, Riley," both wrongly formed, might well have been corrected to *albipalpella*, and the numerous cases of words ending in *us*, to which Chambers added the termination *ella*, such as 5812, *maculatusella*, and 5816, "*obscurusella*," Chmb., surely need correction, as painfully shown where 5815, "*obscurællæ*," Chmb.,



stands next in the List to the latter abominable name. In this case there is only one way to deal with the difficulty, viz., to emend *obscurusella* to *obscorella* and to abolish this name for another species by giving a new name to No. 5815, which being still unrecognised may well be re-christened **perobscurella**, n.n.

I have mentioned one instance in which addition is made to synonymy by erroneous spelling, there are others, as on page 494 we read 5530, "*vicarilis*, Zeller," which should be *vicarialis*, Z., as originally printed; but one of the worst is No. 5729. The name "*basquella*" owes its existence to the present Catalogue. Chambers in both the references there quoted used "*basqueella*," which in his "Index" [Bull. U.S. G.G. Surv., IV, 87, 142 (1878)] he corrected to "*bosquella*," now quoted as a synonym, the name being founded on "Bosque Co., Texas," as I have it in the hand-writing of Belfrage, who resided there. Chambers' own correction should surely have been accepted, but the addition to synonymy, like the original error, can only be regarded as a *lapsus calami*; I mention it merely to extinguish the threatened epidemic due to this variable germ, see Wlsm., Pr. Z. Soe. Lond., 1897, 75, and Busek, Proc. U.S. Nat. Mus., XXV, 864 (1903).

No. 5595 is another instance of an author's error having been unnecessarily perpetuated. Dr. Dietz described this species as "*atruplicetella*," but in the explanation of the plate it is correctly given as "*atropictella*," which name is omitted from the Catalogue. Is this a struggle for consistency *plus* priority? and if so, must we continue writing "*flavib is*," which was published under identical conditions [Swinh., Cat. East and Austral. Lp.-Het. Oxf. Mus., I, 62 (1892)] for "*flavibasis*."

On page 577 *Hypoclopus* is wrongly printed "*Hypocolpus*;" on p. 472 *Acleris* is wrongly "*Alceris*;" and on p. 569 *Xylesthia* is wrongly "*Xylestia*."

At some future time it may be desirable to call attention to some doubtful points in the sequence of genera and to the use of certain generic names, but at present I will only mention one or two.

*Eriocephala*, Crt., is wrongly used on p. 581. *Micropteryx*, Hb., is the *Eriocephala* of Curtis, while *Eriocrania*, Z., is the correct genus for the leaf-mining species referred to by numerous authors under Hübner's name.

*Pronuba* (p. 577) also requires correction. The earliest reference to *Pronuba guccasella*, Riley, is Nature, VI, 444 (London, 26.IX.1872), thus *Tegeticula alba*, Zeller (1873), becomes an undoubted synonym, but Dr. Dyar has overlooked the fact that *Pronuba*, Riley, is homonymous with *Pronuba*, Thoms. (1860) Col., the insect should therefore be known as *Tegeticula guccasella*, Riley.

On page 526 we read "*Dasycera*, Haworth, Lep. Brit., 524, 1829." Haworth never used this name at all, the error has been copied from the European Catalogues; Haworth published the name as *Dasycerus* (*vide* Hw., Lp. Br., 526), but for this *Ecophora*, Ltr. (*nec auct.*) should be substituted [see Wlsm. and Drnt., Ent. Mo. Mag., XXXIV, 34 (1898)], and *Borkhausenia*, Hb., must supplant *Ecophora*, auct. (*nec* Ltr.), at least as far as *minutella*, L., Hb., is concerned.

It was Stephens who [Syst. Cat. Br. Ins., II, 199 (1829)] proposed the new name *Dasycera* because "*Dasycerus*: Genus Coleopterorum. *Vide* Latr. G. III. 19."

The date of the last part of Haworth's *Lepidoptera Britannica* is 1828 (not 1829), *vide* Mag. N.H., I, 348-9 (London, IX.1828).

On page 511 Mr. Busek sinks *Catastega*, Clms., as a synonym of *Gelechia*, Hb.



Dr. Dyar in a foot-note attributes it to the *Tortricidæ*. The imago was unknown to Clemens, but Fyles, Ann. Rep. Ent. Soc. Ont., XXV, 46 (1894), published a note identifying *Catastega aceriella*, Clms. (5777), on Fernald's authority as *Semasia signatana*, Clms. (5189), to this species, the generic term should be restricted and sunk under *Thiodia*, Hb. Dr. Fernald omits Fyles' reference, but includes *aceriella* under *signatana*, which requires this explanation.

The name *Eustixis*, Hb., should certainly have been included on pages 489-90 as a synonym of *Mieza*, Wkr. I believe I was originally responsible for its being sunk as a synonym, nor can it properly be retained, since Hübner himself pre-occupied it by so similar a name as *Eustixia* for another genus; by a curious coincidence, he also gave the same name (*pupula*) to the types of both genera, and although *Eustixis* is properly dropped, the species *pupula* must certainly retain a place under whatever may be the representative name. It is obviously an older name than any here in use, but I will reserve what has to be said on this subject for some future occasion, merely remarking that here again is an instance of omission to look up original references, where under No. 5480 "*crassinervella*" (copied from Chambers) should have been *crassivenella*, Z. "*Amadrya*," p. 573, was printed thus in Chambers' Index, but it was published as *Amydria* by Clemens.

No. 5680, "*touceyella*, Busck"; this is a new name proposed in the List in lieu of *trimaculella*, Chmb. (*nec* Fitch), but surely it should be spelt *touseyella*.

An obituary notice, published in one of the local papers, is now before me, where I find the name which Mr. Busck intended to honour printed "*Vactor Tousey Chambers*,"

I will postpone further criticisms, and again express the high appreciation with which this useful List has been received; its gratuitous distribution among those who have in any way contributed to the literature of the subject is another instance among many of the generosity of scientific men and public institutions in the United States. I am glad to note that the desiderata in the U. S. National Museum are specially marked; if in the near future I should find myself able to fill up several of these gaps, it will be but a very inadequate acknowledgment of the friendly courtesy which has so often been extended to me by those American authors whose patient studies command the respect and recognition of their fellow-workers.

WALSINGHAM.

## Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: June 15th, 1903.—Mr. R. C. BRADLEY, Vice-President, in the Chair.

Mr. W. H. Wilkinson showed a box of *Lepidoptera* from Folkestone, also a small collection made on the Riviera. Mr. R. C. Bradley, a few bees taken at Ventnor, Isle of Wight, early this year: *Halictus quadricinctus*, F.; *Andrena nigroaenea*, Kirb.?, a stylotized ♂; *A. fulvicrus*, Kirb., a nice series; *A. atriceps*, Kirb.; and *A. pilipes*, F. (1). Mr. J. T. Fountain, *Leptidia sinapis*, L., from the Wye Valley; one was a remarkable variety, apparently every scale which should have been black had changed to a dull orange colour, the wing markings at the tip, &c., being of this colour, and all the shading, &c.; also *Bomolocha fontis*, Thnb.

(*crassalis*, Tr.), from the Wye Valley, and *Boarmia luridata*, Bkh., and *Bapta temerata* (S. V.), Hb., from Trench Woods.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, July 23rd, 1903.—Mr. E. STEP, F.L.S., President, in the Chair.

Mr. McArthur exhibited three examples of ♀ *Argynnis Aglaia* of a very unusual size, the largest measuring 74 mm. in expanse; (2) a ♂ with enlarged black markings; (3) *Epinephele Janira*, with considerable xanthic markings; they were all from Brighton. Mr. Tongé, (1) *Heliaca tenebrata (arbuti)* from Nutfield Marsh; (2) the saw-fly, *Pamphilius flaviventris*, bred from a larva found in Tilgate Forest, feeding on blackthorn in August, 1902. Mr. Sich, ova of *Geometra vernaria*, laid by a ♀ captured at Chiswick. Mr. Clarke, a specimen of *Capsus lanarius* just taken in his garden; it was noted as frequently appearing among cultivated flowers. Mr. Ashby, series of *Limobius mixtus* and *Lixus bicolor* from Deal in June, and a specimen of *Polystichus vittatus* from Walmer, all local species.—H. J. TURNER, *Hon. Sec.*

#### SPANISH AND MOORISH MICRO-LEPIDOPTERA.

BY THE RT. HON. LORD WALSINGHAM, M.A., LL.D., F.R.S., &c.

(Continued from page 214).

2898 : 1 (= 2833).—*Apodia helotella*, Stgr.

n. synn. = 2519 (*p.*) *damonella*, Mill.; = 2552 *algeriella*, Bkr.

*Gelechia helotella*, Stgr., Stett. Ent. Ztg. XX. 240 (1859)<sup>1</sup>; Stn. Tin. S. Eur. 148 (1869)<sup>2</sup>. *Lita helotella*, Stgr. and Wk. Cat. Lp. Eur. 1912 (1871)<sup>3</sup>; Mill. Cat. Lp. Alp. Mar. 329 (1875)<sup>4</sup>. *Bryotropha damonella*, Mill. Cat. Lp. Alp. Mar. 328 (1875)<sup>5</sup>. *Lita helotella*, Htn. MT. Münch. Ent. Ver. IV. 18. No. 1912 (1880)<sup>6</sup>. *Gelechia algeriella*, Bkr. Ent. Mo. Mag. XXIV. 255 (1888)<sup>7</sup>; Stgr. and Rbl. Cat. Lp. Pal. II. 2552 (1901)<sup>8</sup>. *Gelechia (Lita) helotella*, Stgr. and Rbl. Cat. Lp. Pal. II. 2633 (1901)<sup>9</sup>.

*Hab.*: S. FRANCE<sup>9</sup>—Cannes IV<sup>4-5</sup>; IV. 1881, 4-16.V.1890, 20.IV.—16.V.1892; Frejus IV.1881 (*Wlsm.*). CORSICA—Vizzavona, 9.V.1896 (*Wlsm.*). SPAIN<sup>6</sup>—ANDALUSIA<sup>3, 9</sup>—GRANADA—Granada, IV.—V.1858<sup>2, 6</sup>; 11-24.V.1901 (*Wlsm.*); MALAGA—Malaga, 2.V.1901 (*Wlsm.*); HUELVA—Coto, 23.IV.1901 (*Wlsm.*). MO-ROCCO—Tetuan, 26-7.IV.1902; Fondak, 28.IV.1902 (*Wlsm.*). ALGERIA—Lambessa<sup>7</sup>; Le Tarf, 13.IV.1896 (*Eaton*).

I have seen Millière's type of *damonella*, and possess a specimen from Millière's collection (5264), these are identical with *Lita helotella*, Stgr. (5388), named by Ragonot, who suggested that these species were synonymous, pointing out that in the fore-wings vein 8 arises out of the stalk of 6 and 7. In the hind-wings 3 and 4 are remote, and 6 and 7 separate. This species should, therefore, be

referred to *Apodia*, Hein. Staudinger and Rebel, Cat. Lp. Pal. II 2519 (1901), erroneously include in the synonymy of *Bryotropha politella*, Stn. “? *Damonella*, Mill. Cat., rais. p. 328,” these species are not even congeneric. Millière records *helotella* from Cannes, on Peyerimhoff's authority, but does not appear to have been acquainted with *helotella*, Stgr., himself, since he re-described it on the preceding page as *damonella*, sp. n. I have seen the type of *algeriella*, Bkr., this is certainly the same as *damonella*, Mill.

2900 : 1.—*APODIA SEMINIVORA*, *sp. n.*

*Antennæ* pale cinereous, faintly annulate with brownish fuscous. *Palpi* pale cinereous, suffused with brownish fuscous externally, except at the apex of the median joint. *Head* pale cinereous, thickly dusted above with brownish fuscous. *Thorax* pale brownish cinereous, thickly sprinkled with fuscous. *Fore-wings* pale brownish cinereous, thickly sprinkled with fuscous, the base more suffused than the outer half on which the sprinkling is more visible, spreading over the pale cinereous cilia, in which it tends to form three parallel sinuate dividing lines converging to the apex; three small fuscous dots are faintly indicated, one on the cell very faint, one slightly stronger in the fold preceding it, and one at the end of the cell. *Exp. al.* 14 mm. *Hind-wings* grey; cilia brownish cinereous. *Abdomen* brownish fuscous. *Legs* cinereous, sprinkled with fuscous externally.

*Type*, ♂ (87668); *Larva* (87671) Mus. Wlsm.

*Hab.*: SPAIN—CADIZ—Chiclana. Larva in dry seed-heads of *Asteriscus maritimus*, 23.XII.1901, excl. 19.IV.1902; 20.IV.1902. MOROCCO—Tangier, S.V.1902. Three specimens.

A very inconspicuous species, apparently difficult to breed, as I have succeeded in obtaining only two specimens from more than a hundred larvæ collected in early spring at Chiclana, 1901–2, several specimens had evidently died through the thick leathery calyx hindering their egress by contraction. I found larvæ also at Tangier, but failed to rear them; I, however, took a worn specimen on May 5th. It is quite distinct from the allied species (*asterisci*), which feeds in the dry seed-heads of *Asteriscus mauretanicus*, appearing to be confined to *Asteriscus maritimus*. The larva is yellowish white, with a pale brown head, devoid of colour on the thoracic and anal plates. It feeds at the base of the old seed-heads, and burrows for a short distance down the stem, apparently when preparing to pupate. The larva was extremely common near the salt-marshes at Chiclana, where a large patch of the somewhat local food-plant occurred.

2900 : 2.—*APODIA ASTERISCI*, *sp. n.*

*Antennæ* pale brownish cinereous, faintly annulate with fuscous. *Palpi* pale brownish cinereous, the median joint shaded externally with fuscous nearly to its

apex. *Head* pale brownish cinereous. *Thorax* cinereous, shaded with brownish fuscous. *Fore-wings* whitish cinereous, longitudinally shaded with brownish fuscous, intermixed with pale chestnut-brown; a broadish shade extends from the base along the costa nearly to the apex, a shorter shade along the disc, and a third, still shorter, beneath it, extending somewhat beyond the middle of the fold, these are all more or less mixed with chestnut-brown, the dorsum is sprinkled with brownish fuscous, and a chestnut-brown patch runs parallel with the termen to the apex; cilia pale brownish cinereous, with patches of blackish scales along their base, and two brownish fuscous shade-lines running through them, converging at the apex. *Exp. al.* 11—14 mm. *Hind-wings* greyish; cilia pale brownish cinereous. *Abdomen* dark greyish. *Legs* pale cinereous.

*Type*, ♂ (S7702); ♀ (S7704). Mus. Wlsm.

*Hab.*: SPAIN—MALAGA—Malaga, 3.II—24.III; Larva in dry seed-heads of *Asteriscus mauretanicus*, I. excl. 27.I—28.III.1902; HUELVA—Coto, 23.IV.1902; GRANADA—Granada, 14—17.V.1902. Twenty-seven specimens.

The pattern of the fore-wing is confused and ill-defined, sometimes scarcely distinguishable in the general suffusion of mixed brownish-fuscous and light chestnut brown—in short, very variable in the degree of definition.

The larvæ were extremely common in dry seed-heads of *Asteriscus mauretanicus*, and much more easily reared than is *seminivora*.

#### 2900: 3.—APODIA SCHOLASTICA, sp. n.

*Antennæ* brownish cinereous. *Palpi* pale cinereous, the short median joint suffused externally and beneath with brownish fuscous. *Head* dusky cinereous. *Thorax* whitish cinereous, suffused with brownish fuscous. *Fore-wings* whitish, with a greyish tinge, sprinkled along the costal half with scattered fuscous scaling, a small elongate blackish dot beneath the costa at about one-third; along the basal two-thirds of the fold, commencing near the base, runs a chestnut-brown streak edged with black, followed by an elongate black spot between the fold and the cell at about half the wing-length, this again is followed by an elongate rich chestnut-brown patch parallel to the termen, narrowly outlined with black at its outer edge; in the dirty greyish white cilia are four or five patches of blackish scales on their basal half, the two below the apex produced more faintly outward through the outer half of the cilia. *Exp. al.* 11—12 mm. *Hind-wings* greyish; cilia pale brownish cinereous. *Abdomen* greyish fuscous. *Legs* pale brownish cinereous.

*Type*, ♂ (S7699). Mus. Wlsm.

*Hab.*: SPAIN—CADIZ—Chiclana, 22—23.II.1901.

I met with three specimens only of this very distinct species between the marshes and the pine-woods at Chiclana.

It resembles *asterisci* in pattern, but is more brightly coloured, and has shorter and, perhaps, more pointed wings, it is easily distinguished by its much more clearly defined markings, and the hind-wings are broader in proportion to the fore-wings.



2903 : 1.—*DIDACTYLOTA ALTITHERMELLA*, *sp. n.*

*Antennæ* whitish, with pale greyish fuscous annulations. *Palpi* whitish, with grey shading externally. *Head* and *Thorax* white, shaded with bluish grey. *Forewings* white, profusely sprinkled with slaty bluish grey scales, the termen and cilia the same but sprinkled with bluish black scales of which a rather noticeable line runs through the outer half of the cilia. *Exp. al.* 10—12 mm. *Hind-wings* bluish grey; cilia pale brownish grey. *Abdomen* dull slaty grey. *Legs* pale brownish grey.

*Type*, ♂ (82586); ♀ (85927). Mus. Wlsm.

*Hab.*: S. FRANCE, (Pyr. or.)—Thuès-les-bains, 1.VII.1900. SPAIN—GRANADA—Granada, 21.V.—17.VI.1901. Fifteen specimens.

This species differs from *Didactylota kinkerella*, Snell., in its greyish, not ochreous tinge, and more slender appearance; also in the slightly narrower and less produced apex of the posterior lobe of the hind-wings.

2955 (=2975).—*HYPSOLOPHUS LIMBIPUNCTELLUS*, Stgr.

n. syn. = *millierellus*, Stn.

*Hypsolophus limbipunctellus*, Stgr., Stett. Ent. Ztg. XX. 245 (1859). *Nothris limbipunctella*, Stgr. and Rbl. Cat. Lp. Pal. II. 2975 (1901). *Ypsolophus millierellus*, Stn. N. H. Tin. XIII. 336-7 (1873); Stgr. and Rbl. Cat. Lp. Pal. II. 2955. (1901).

FRANCE—Cannes, Larva *Cistus monspeliensis*, 29.IV. excl. 5.VI—21.VII.1896. SPAIN—MALAGA—Malaga, Larva *Cistus crispus*, excl. 23.III.—15.VI.1901; GRANADA—Granada, 21—30.V.1902. MOROCCO—Tangier, 9.II.1902; Larva *Cistus salviæfolius*, 20.V.1902.

Stainton combined *millierellus* with *limbipunctellus* in his collection, having evidently come to the conclusion that they were the same. I have long been of this opinion, and I believe Ragonot agreed with me.

2955 : 1.—*HYPSOLOPHUS HELIANTHEMI*, *sp. n.*

= *Nothris limbipunctella*?, Mill. Ann. Soc. Ent. Fr. (6. s.), V.118-9 Pl.II. 9 (1885).

*Antennæ* greyish fuscous. *Palpi* pale mouse-grey, median joint with the anterior two-thirds of the rather narrow extended tuft blackish, terminal joint slightly shaded at the apex. *Head* fuscous above, mouse-grey at the sides. *Thorax* fuscous. *Forewings* pale mouse-grey, sprinkled with fuscous scales, a slight fuscous suffusion along the costa and three ill-defined, but conspicuous, fuscous spots along the disc; the first near the base, the second before the middle, the third at the end of the cell, of these the outer spot is smaller than the other two and the central spot reaches a little higher towards the costa than its companions, but they are



situated in the same line; cilia paler than the wings, with the termen narrowly marked with fuscous scaling and three shade-lines running through them, the outer one near their tips and very faint. *Exp. al.* 16.5 mm. *Hindwings* pale stone-grey; cilia pale ochreous grey. *Abdomen* greyish fuscous. *Legs*, hind tibiae ochre-grey, the tarsi slightly shaded with fuscous.

*Type*, ♂ (87667). Mus. Wlsm.

*Hab.*: SPAIN—CADIZ—Chiclana. Larva *Helianthemum lavandulaefolium*, 27.II. excl. 11.IV.1901. Unique. FRANCE—Alpes-Maritimes IX<sup>1</sup>. ITALY—Liguria<sup>1</sup>.

This distinct species is at first sight somewhat similar to *Hypso-lophus cisti*, Stgr., having much the same tint of colour, but it is at once distinguishable by the more elongate and narrower tuft on the median joint of the palpi, by the separate origin of vein 6 in the forewings, by the presence of three conspicuous spots in a line along the disc, and by the slender parallel lines of fuscous scales running through the terminal cilia; moreover the cilia of the hind-wings are more ochreous. I have little doubt that this is the species which Millière described and figured as *limbipunctella*, Stgr.?, and which was in Staudinger's opinion "Peut-être species nova."

### 3002 : 1.—MEGACRASPEDUS PUSILLUS, *sp. n.*

*Antennæ* fuscous, not annulate. *Palpi* whitish cinereous, shaded with fuscous externally on the median joint. *Head* whitish cinereous. *Thorax* brownish grey. *Forewings* brownish grey, dusted with pale cinereous, devoid of markings, with the exception of a small blackish spot at the end of the cell; cilia brownish grey, scarcely paler than the forewings. *Exp. al.*, 11—12 mm. *Hindwings* pale grey; cilia pale brownish grey. *Abdomen* greyish fuscous. *Legs* brownish cinereous.

*Type*, ♂ (86780). Mus. Wlsm.

*Hab.*: SPAIN—GRANADA—Sierra Nevada, 3.VI.1901. Four specimens.

This species differs from others in the genus in its greyer colouring combined with the absence of all markings except the small discal spot. In colour it is not unlike the French *tutti*, Wlsm., but from this it is amply distinguished by its smaller size, corresponding with that of *separatellus*, F. R., and perhaps very small varieties of *subdolellus*, Stgr., but these are entirely different in colour.

### 3201 : 1.—DEPRESSARIA GENISTELLA, *sp. n.*

*Antennæ* mouse-grey. *Palpi* mouse-grey, sprinkled with fuscous externally on the median joint and in two rings round the terminal joint. *Head* and *Thorax* mouse-grey, the latter tufted posteriorly. *Forewings* pale mouse-grey, the colour-effect being apparently produced by a very profused sprinkling of pale cinereous

scales on a tawny greyish ground, making them appear unicolorous throughout; there are four minute discal spots, two placed obliquely at about one-third, followed by two others in line with the lower one, each of these is composed of chestnut-brown and white scales; cilia rosy grey; underside unicolorous, except for the paler costa. *Exp. al.*, 22 mm. *Hindwings* shining pale stone-grey, with very slender wavy shade-lines throughout the pale stone-grey cilia; underside unicolorous, except the costa and apex, which are speckled with black. *Abdomen* and *Legs* stone-grey.

*Type*, ♂ (86817); ♀ (86816). Mus. Wlsm.

*Hab.*: SPAIN—GRANADA—Granada. Larva among flowers of a low-growing *Genista* (possibly *hispanica*), V. excl. 10–22.VI.1901. Five specimens.

This species comes into the same group as *fruticosella*, Wlsm., but in the absence of the coarser sprinkling and in the presence of more conspicuous white discal dots cannot possibly be confused with it.

### 3201 : 2.—DEPRESSARIA FRUTICOSELLA, *sp. n.*

*Antennæ* black. *Palpi* pale cinereous, dusted with black externally on the median joint, the terminal joint more inclining to ochreous, with two blackish spots. *Head* pale stony cinereous, the face whiter. *Thorax* pale stony cinereous, clouded posteriorly with fuscous. *Forewings* pale stony cinereous, evenly speckled throughout with small groups of blackish scales, one at the extreme base of the costa and one at the base below the fold slightly more conspicuous than the others; on the disc at one-third is a pair of small reddish brown spots placed obliquely, the lower spot a little beyond the upper; in a line with the lower spot is a similar one about the middle of the wing, sometimes accompanied by white scales, sometimes almost obsolete; at the end of the cell, in the same line or a little below it, a fourth spot occurs, which, when visible, is composed of reddish brown and white scales (probably in caught specimens these outer spots would be scarcely traceable); cilia pale stony cinereous, rather shining, with a tawny greyish gloss; underside without markings, except that the costa is paler throughout. *Exp. al.*, 20–23 mm. *Hindwings* shining, pale tawny cinereous; cilia slightly paler than those of the forewings. *Abdomen* pale tawny cinereous. *Legs* pale cinereous, sprinkled with fuscous externally; there are two small tufts of chestnut-brown scales beneath the eyes, apparently from the base of the anterior femora.

*Type*, ♀ (86839); ♂ (86840). Mus. Wlsm.

*Hab.*: SPAIN—GRANADA—Granada. Larva on leading shoots of *Bupleurum fruticosum*, 21.V. excl. 22.VI.—2.VIII.1901. Seven specimens.

This species belongs to the somewhat square-winged section represented by *scopariella*, Hein., and others, although it is in no way to be compared with any of them in its colour and markings; I should place it near *rutana*, F.

## 3261.—DEPRESSARIA DEPRESSELLA, Hb.,

3261 + *b.* DEPRESSELLA, Hb. + PRANGOSELLA, *var. n.*

*Antennæ* dull tawny grey, the basal joint whitish ochreous. *Palpi, Head* and *Thorax* whitish ochreous. *Forewings* pale tawny fawn-grey, with a slight ochreous tinge, sometimes the ochreous becomes more pronounced at the expense of the grey suffusion; in some specimens a few whitish cinereous scales are scattered beyond and below the outer end of the cell; there is a narrow whitish ochreous line along the limbus at the base; cilia the same colour as the wings, but the outer half somewhat paler than the basal. *Exp. al.*, 14—17 mm. *Hindwings* pale tawny grey; cilia pale greyish cinereous, sometimes inclining to ochreous. *Abdomen* shining pale greyish cinereous. *Legs* pale cinereous, the outer sides of the hind tarsi spotted with mouse-grey.

*Type*, ♂ (87633); ♀ (87630); Larva (87637). Mus. Wlsm.

*Hab.*: SPAIN—SEVILLA—Coria del Rio, 10.XII.1900. MO-ROCCO—Tangier, 9-26.III.1900; Larva *Prangos ferulacea*, 9.V. excl. 19-25.V.1902. Twenty specimens.

*Larva* grey, head and pronotal plate black, the spots on the remaining somites shining whitish; *Legs* black.

This variety lacks the reddish tinge which distinguishes the typical form; its average size is somewhat smaller, and although it seems worthy of description as a well-marked variety, I cannot regard it as a distinct species. In size and general appearance *var. prangosella* more nearly resembles *var. amasiella*, Stgr., from Kerasdere, it is not improbable that Staudinger's remark "cinige sind fast grau" may refer to *prangosella*, but no specimen in my series agrees in colour with an exponent of *amasiella* (Wlsm. Coll., 120) received from Staudinger in 1893.

It feeds in the seeds of *Prangos ferulacea*. The only difference I can detect in the larvæ is that one is grey while the other is reddish.

(To be continued).

NOTES ON *CLOSTERA ANACHORETA*.

BY MISS A. D. EDWARDS.

In Mr. C. G. Barrett's interesting paper on Interbreeding *Clostera anachoreta*, in the Ent. Mo. Mag. for September, p. 215, the wrong locality was unfortunately given for my original find. It should have been St. Leonard's-on-Sea and not Deal.

I am now advised to re-publish an account of how I obtained the species, in order to prevent confusion in the future. My former note on the subject appeared in the "Entomologist" only.

The original find was a cluster of nineteen ova on sallow at Bulverhythe, St. Leonard's-on-Sea, on August 23rd, 1893; the sallow in question stood almost alone

on a railway bank, and I may as well confess that it was a clear case of trespassing, but solitary bushes are almost irresistible to ova and larvæ hunters. As these ova were unknown to me I was naturally anxious to see what they would produce, and before the larvæ were full grown I had the pleasure of knowing that I was the fortunate possessor of a wild brood of *C. anachoreta*. The perfect insects emerged in April, 1894, and the brood was kept going from that time until last winter, when it unhappily failed. My experience then was practically the same as Mr. Barrett's, only he lost his in the spring and mine lasted till the following winter; all my moths, weak and crippled, emerged last December and January, and many useless eggs were laid.

Although the brood had shown signs of weakness from time to time during the long interbreeding, I was a good deal surprised at it giving in when it did, as the moths of 1902 were as fine as any I had bred.

After so many years it seems very strange to have no *C. anachoreta* in the breeding cage, and though three broods a year were rather much, I need hardly say I am very sorry that it has come to an end.

The Homestead, Coombe Hill, East Grinstead :  
October, 1903.

*OPHIUSA STOLIDA*, FAB., A NOCTUID NEW TO BRITAIN.

BY J. JÄGER.

On September 23rd, whilst sugaring near Dartmouth, I perceived a moth with upturned wings of great beauty, resembling the genus *Heliothis*, but an entire stranger to me. After capture, which was easily effected, I sent a rough sketch to my friend Mr. Porritt, who suspected it to be *Ophiusa stolidæ*. On my return to town I took it to Mr. C. G. Barrett, by whose courtesy we were enabled to verify its identity. The insect is a known inhabitant of Asia Minor, North Africa, Southern Europe, &c. The larva is recorded to feed on bramble, which abounds on the spot where I found it. As my specimen is in perfect condition, I have no doubt that it must have been bred there, and that the species has probably become established in that locality. During another search, which, owing to the visitation of heavy storms had to be suspended, nothing further was discovered.

65, St. Quintin's Avenue, North Kensington, W. :  
October 5th, 1903.

*MYRMECORIS GRACILIS*, SAHLB., AN ADDITION TO THE BRITISH HEMIPTERA.

BY EDWARD SAUNDERS, F.R.S., &c.

Mr. E. A. Butler, who has lately been staying for a short time at Fleet, Hants, has had the satisfaction of capturing a single ♂ example of the above, which is one of the most interesting additions that has

been made to our insect fauna for many years. *Myrmecoris gracilis* is a rarity everywhere, and a very striking insect, so that it could hardly escape notice; it is very like an ant in form, and was found on heathy ground not far from a nest of *Lasius niger*, L. This ant, however, is much smaller than the bug, so that it would only resemble the larval conditions of the latter.

The larva of *Alydus calcaratus* is well known to possess an ant-like appearance, and is fairly abundant on our Surrey Commons.

*Myrmecoris* has a considerable superficial resemblance to this larva, and Mr. Butler brought me a specimen of each to examine. Both have the large headed appearance of an ant, but as he remarked, this is represented in the two insects in a different way—in the *Alydus* larva the actual head is large and the thorax narrow behind it, but in the *Myrmecoris* to get the effect of a large formiciform head the thorax is much widened in front, so that the produced base of the head behind the eyes, so characteristic of most ants, is represented by the front part of the thorax.

The genus is a small one, only two species being included in Puton's Catalogue, 1899, where the distribution of *gracilis* is given as North Europe and France; it should be placed next to *Pithanus* in our list. The genus was created by Gorski in his "Analecta" (1852), p. 167, and the species was described by him under the name "*agilis*," and figured as *lituanica*, which name he withdraws in a footnote to his description; both these names, however, sink to that of *gracilis*, Sahlb. (Monog. Geocor. Fenniae, 1848), described under the genus *Globiceps*.

The following is a short diagnosis of its characters:—

In general form very much like a *Formica*, and about the length of *Pithanus Märkeli*, but much narrower, dark blackish-brown, legs and antennae paler, second joint of the latter darkened on its apical half. Elytra (form. brach.) with the base and apex whitish, (form. maer.) with a triangular spot at the base, and a posterior transverse band white. Abdomen with the sides of the connexivum with white triangular spots at the joints of the segments. Head with the eyes large, projecting beyond the sides of the pronotum, which they touch posteriorly; face elongate, triangular. Antennae as long as the entire insect, rostrum reaching beyond the intermediate coxae. Pronotum slightly convex, its anterior margin rounded, sides converging to the base. Mesonotum short, very convex, its sides very rapidly diverging posteriorly. Elytra (form. brach.) hardly longer than the mesonotum, (form. maer.) longer than the abdomen, without any distinct cuneus, and with only a single cell in the membrane. Abdomen somewhat spherical, strongly constricted at the base. Legs long, especially the hind pair. Tibiae with very fine inconspicuous hair-like spines on their outer, and with stronger spines on their inner sides.

Long., 4-5 mm.



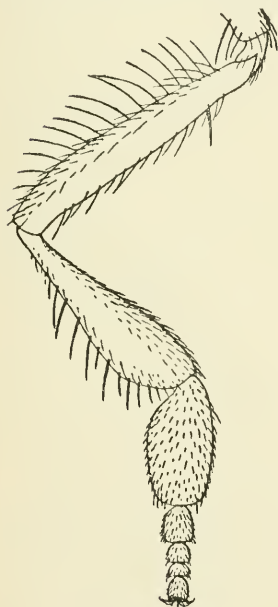
Mr. Butler's specimen is a brachypterous ♂. I have never seen the macropterous form of either sex, but have taken the characters of it from Reuter's "*Revisio critica Capsinarum præcipue Scandinaviæ et Fenninæ.*"

St. Ann's, Woking :  
September 22nd, 1903.

*AGATHOMYIA VIDUELLA*, ZETT.: A NEW BRITISH FLY.

BY J. H. WOOD, M.B.

Of this species, new so far as our Fauna is concerned, two males and one female have been obtained; the actual dates of capture being ♂, 14.6.02, ♂, 13.5.03, ♀, 14.6.02. They were all netted off one particular sycamore bush in a shady keeper's path in Stoke Edith Wood, one of the richest bits of collecting ground in this neighbourhood. The insect is very distinct, and may be known at once from either of our other two species by the dilated hind legs of the male (fig.) and the deep black colour of the female. Not being able to run it down by the works at my disposal (Schiner includes it among the European species, but without a description), I was obliged to have recourse to Mr. Collin, who kindly identified it, and as he tells me the male has never yet been described, it becomes necessary to give a more detailed account of the insect than would otherwise have been needed. It



*A. viduella*, Zett.  
Right hind leg of male.

is therefore unfortunate that neither of the males is perfectly mature, which has led to a partial collapse of the dilated hind legs, and in one of the examples has also left them of an unnatural pale colour. This does not, however, materially affect the describer's work, but it has placed Mr. Collin at a disadvantage, who in his drawing has been obliged to represent the limb as it is, rather than as it should be.

♂. The most obvious character is the excessive dilatation of the hind legs, the femora being stout, the tibiae gradually and widely dilated, and the basal joint of the tarsi long and greatly swollen—in fact, the legs of a *Callimya* rather than of an *Agathomyia*. The curved bristle underneath the front femora is present, but smaller than in allied species. Other important characters are the absence of the

short bristle close to the tip of the front tibiæ, behind; the absence of the usual bristle or bristles on the basal joint of the middle tarsi, although the one on the tibiæ is present; and, when compared with its allies, the somewhat shorter third joint of the antennæ, as pointed out to me by Mr. Collin; the legs too in the more mature example are distinctly darker than in *antennata*, the tibiæ and basal joint of the middle tarsi being black like the rest of the joints.

♀. Besides the deep black colour of thorax and abdomen, it is only necessary to say that the frons is highly polished, the legs tawny with the hind pair distinctly stouter than in its allies without being dilated, and the black halteres supported on orange stalks.

It will be seen that the insect presents more than one point of interest. Almost universally in the *Platypezidæ* there is a marked contrast between the colouring of the sexes on the thorax and abdomen, the female being much paler than the male, and often ornamented with bright colours and patterns, but here the sexes are of the same deep black colour. Further, the bristle or bristles on the first joint of the middle tarsi are seen to be of no generic value, a possibility which Mr. Verrall himself hinted at when he founded the genus. On the other hand, the more important characters remain, viz., the elongated form of the third joint of the antennæ, the absence of spines on the subcostal vein, and the presence of the peculiar curved bristle underneath the front femora.

Tarrington: October, 1903.

## ON THE RELATIONSHIP OF ACULEATE INQUILINES AND THEIR HOSTS.

BY EDWARD SAUNDERS, F.R.S., &c.

The very interesting paper on *Vespa austriaca* and *V. rufa*, by Messrs. Carpenter and Pack-Beresford in our last two numbers has induced me to offer some remarks on the subject of inquilinism or cuckoo parasitism generally, not as a criticism of their conclusions, but as a record of various points which I have noticed.

It seems clear from the account given by the above authors that at any rate the two forms under consideration are specifically distinct according to our ordinary views of what makes a species, as besides the colour differences, they are structurally distinct in both sexes, which is more than can be said of many species which are considered valid by entomologists; at the same time they are more closely allied to each other than any other inquilines and hosts that are at present known. A curious point which I have noticed is that as we ascend in the scale we find as a rule the hosts and their inquilines more like each other, and in the social species this similarity is the most marked;

for instance, in *Vespa* the resemblance is so great that the difference is only of a specific nature. In *Psithyrus* and *Bombus* there is greater divergence, sufficient for the creation of a genus, and yet far less than in the cases of the solitary bees. It is a notable fact, that in what we consider the highest aculeates, viz., the species of *Apis*, there should be nothing of the nature of aculeate inquilines at all.

In the other great social section, the *Heterogyna*, there is only one species that I know of that can be considered in any way as an inquiline in this sense, viz., the extraordinary *Anergates atratulus*, which lives in nests with *Tetramorium cespitum*; this is, however, in both sexes, exceedingly unlike its host.

When we turn to the solitary genera we find wider divergence in structure between the hosts and inquilines, but in most cases the male armature in both, at any rate in the higher *Apidae*, is formed on a similar general plan, even in genera which might at first sight be widely separated. Thus we find very similar armatures in *Anthophora* and its inquilines *Melecta* and *Crocisa*, and to a certain extent a general similarity of structure, the same may be said of the genera of the *Dasygastræ*, *Megachilæ* and *Cœlioxys*; *Chalicodoma* and *Dioxys*, *Osmia*, *Anthidium*, *Heriades*, and the species of *Stelis* which associate with them. In all these genera the anal opening of the ♂ is inferior, and I am only aware of one case, *Cœlioxys quadridentata* and *Anthophora parietina*, as recorded by Friese and also observed by Mr. Morice, where a species of this section is associated as an inquiline with one of the section where the opening is terminal, or *vice versa*.

The lower or short tongued bees of the families *Colletidae* and *Andrenidae*, which act as hosts, are much more widely differentiated from their inquilines (except *Sphecodes* and *Halictus*, which will be considered later on). *Andrena*, for instance, is very different structurally from *Nomada* both in its mouth parts and in the form of the armature and terminal segments in the ♂, as well as in its style of colouration; still the labial palpi are cylindrical in both genera, and Packard says that the larvæ of *Nomada* have, like those of *Andrena*, three conspicuous spines on the upper and posterior edge of the orbit, also in both genera the stinging power is very slight.

*Nomada*, however, is not exclusively associated with the *Andrenidae*, as a few species are known to be inquilines on species of *Eucera*. In *Colletes* and *Epeolus* again the difference between host and inquiline is very great, both in colour and structure, but here there is one property in common, viz., that both sting with unusual severity for their size. The seventh ventral segment also in *Epeolus* ♂ is not altogether unlike that of *Colletes* in general form, i. e., if the two wings of the segment and the latter were united to form a single plate.

*Halictus* and *Sphecodes*, which I am treating as host and inquiline, as the evidence in favour of this relationship is to my mind practically conclusive, afford the most puzzling question of all. Both being short tongued bees, and closely allied apparently to *Andrena* and very far removed in structure from the higher *Apidae*, their great resemblance to each other is perplexing. On the other hand, *Halictus* exhibits a distinct tendency to socialism in its colonizing habits, as it has been shown that its burrows, which are often placed very close together, occasionally unite so as to form, as Dr. Sharp puts it in his "Insects," part ii, p. 24, a common "gallery which gives access to various groups of cells," and from this point of view the similarity of structure of host and inquiline would be natural and in conformity with what has been observed in the social genera.

Passing from the solitary bees, there are two interesting cases of inquilinism in the solitary wasps, *Odynerus* and *Chrysis* and *Polistes* and *Mutilla*. In these cases the inquilinism is not quite of the same nature as in the *Anthophila*, as the *Chrysis* larva destroys the larva of the *Odynerus*, and I only introduce these as there is an extraordinary similarity in the structure of the pronotum, both in *Odynerus* and *Chrysis* and also in *Polistes* and the ♂ of *Mutilla* (Ashmead even places *Chrysis* in his *Vespoidea*), the sides of the pronotum being produced backwards to the insertion of the wings, so that the posterior margin of that segment is deeply emarginate, enclosing the front portion of the mesonotum.

I think a consideration of the above cases strongly favours the view that host and parasite earlier or later in their history in most cases originally sprang from a common stock. I say in most cases, as in some inquiline genera, *e. g.*, *Nomada*, a few species seem to have wandered off to hosts belonging to genera different from those associated with by the bulk of the genus, and that the inquilines and hosts in the lower bees were differentiated off at an earlier period than those of the higher. Messrs. Carpenter and Pack-Beresford's belief that *Vespa austriaca* is "the ancestral stock" of *V. rufa* is a very interesting one. I have often thought that the inquiline bees might some day prove to be the ancestors of the industrious ones; but there are so many points apparently distinctly in opposition to such a theory, that I have never been able to see how it could work out. Still there is so little known about this very interesting subject, that any theories must be more or less speculative.

St. Ann's, Woking:  
October 10th, 1893.



HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH  
*TENTHREDINIDÆ*, &c. (6).

BY THE REV. F. D. MORICE, M.A., F.E.S.

CEPHINI.

The *Cephini*, known to me for certain as British insects, fall, according to Konow's system, into five separate genera. Two of these, viz., *Janus* and *Macrocephus*, (= *Phyllæcus*, C.), are recognised by Mr. Cameron, but as subgenera only; the rest, viz., *Calameuta*, *Cephus*, and *Trachelus*, he includes in his subgenus *Cephus*. And he regards the whole tribe as forming but a single real genus *Cephus*.

It would be alien from the purpose of these Notes to argue whether or no the rank of "true genera" should be accorded to Konow's groups; but, genera or subgenera, they are founded on easily appreciable differences of structure. And when once a specimen has been referred to one or other of them by observation of the characters noted in my Table (*ante* p. 188), its specific determination will speedily follow, since all Konow's genera, except *Macrocephus* and *Cephus*, are represented by a single British species each.

In my List of Genera (p. 117) I "obelized" *Calameuta* as not known to me by autopsy. This was a mistake: the obelus (†) should have been prefixed to the following genus, viz., *Astatus*. This latter is still a mystery to me, for the following reasons.

In 1776 Moses Harris figured a "*Syrex niger*," with which both Konow and Cameron identify the species, afterwards described by Fabricius (1787) as *Sirex troglodyta*, and figured by Panzer as *Astatus troglodytus*, F. I have received what should be this species from Herr Konow as *Astatus niger*, Harris, and it certainly possesses the characters on which Konow bases his definition of genus *Astatus* (*ante* p. 188). But then I have hitherto altogether failed to discover any real British exponent of the species I have received from Konow. Mr. Cameron describes a species, which he places in his subgenus *Cephus*, as *niger*, Harris. No such species, however, is to be found in his collection. The only authority he quotes for its occurrence in England is Stephens. But the specimens which, in Stephens's collection, are called *troglodyta* (with *niger* as a synonym), belong neither to Cameron's subgenus *Cephus* nor to *Astatus*, as defined by Konow. They are 2 ♂♂ and 2 ♀♀ of *Macrocephus* (= *Phyllæcus*, C.) *satyrus*, Pz. I have carefully examined them, and feel sure that I am not mistaken. Either, therefore, *niger*, Harris, is after all not Panzer's *troglodytus*, but his *satyrus*; or, if it be really the *Astatus* with which it is identified by Konow, it would seem very doubtful whether it can still be considered as an existing British species. Should it, however, really exist as such, the characters given for *Astatus* in my Generic Table above should suffice to distinguish it from any of our other *Cephini*.

I shall therefore now pass on to the species which I actually



know as British, giving for *Macrocephus* and *Cephus* brief Synoptic Tables, and as to *Janus*, *Calameuta*, and *Trachelus*, simply naming the one British species by which each is represented, together with a statement of its most noticeable characters, so that a collector may "check" a determination of it, arrived at by means of the Table above quoted (p. 188).

#### SYNOPSIS OF BRITISH MACROCEPHUS, SPP.

Base of pronotum marked with yellow; joints of antennæ projecting slightly at their apices beneath (subserrate) ..... *linearis*, Schrank.

— Base of pronotum quite black; antennal joints simple ..... *satyrus*, Pz.

These are both large species, *linearis* being (on the average) the larger of the two, and nearly always much more brightly coloured. Both occur from time to time in this neighbourhood (Woking, &c.), but neither seems to be exactly common. (Mr. Cameron's description of *satyrus* contains much that I am unable to follow, and Herr Konow questions whether his insect is really *satyrus* at all; but I should think it must be so, though not a normal form of it).

#### SYNOPSIS OF BRITISH CEPHUS, SPP.

1 Abdomen entirely black ..... *pallipes*, Klg., ♀  
(= *phthisticus*, C.).

— Abdomen marked with yellow ..... 2.

2 Middle abdominal segments (4, 5, 6) broadly banded with reddish (orange) yellow; head somewhat dull through the closeness of its puncturation...  
*pallipes*, Klg., ♂.

— Only the 4th and 6th segments (not the 5th) broadly banded with pure (not reddish) sulphur-yellow; the head shining ..... 3.

3 Inner side of hind tibiæ black from the apex to near the base; penultimate joints of antennæ more dilated (the dilatation less gradual and commencing later, which makes it more conspicuous); breast of ♂ usually brightly yellow ..... *pygmaeus*, L.

— Hind tibiæ only ringed with black at the apex, otherwise yellow both without and within; dilatation of antennæ slighter and more gradual, commencing earlier; breast of ♂ usually quite black ..... *pilosulus*, Thoms.

According to Konow, *pusillus*, C., ♂, and *pygmaeus*, C., ♀, = *pygmaeus*, L.; while *pygmaeus*, C., ♂, and *pusillus*, C., ♀, = *pilosulus*, Thoms. I have found both species together in this neighbourhood; but *pilosulus* seems decidedly rare, while *pygmaeus* is a most abundant species, not only all over Europe, but in Syria and Egypt. I have seen it sometimes literally in hundreds visiting *Ranunculus*, to which it seems exceedingly partial, and it abounds in and near corn fields in early summer.

The ♂ of *pallipes* is a very pretty slender little insect, and is curiously unlike its ♀. I have taken the two together in this neighbourhood and in Dorsetshire.

JANUS.—Our one species is *cynosbati*, F., nec. L. (= *femoratus*, C.).

It differs from all our *Cephini*, except *C. pallipes*, ♀, in the entirely black abdomen; but, unlike that species, has the antennæ thin and filiform throughout—not in the least dilated towards the apices. A striking feature also, in *typical* specimens, is the pale red colour of all the femora, but there is another form (*luteipes*, Lep.) in which the hind femora are black.

In Stephens's collection the former variety is called *connectens*, the latter *femoratus*. I have never met with the species myself, but several of the form with red femora have been sent to me for determination by correspondents. Mr. A. J. Clitty took one this year at Brandon, Suffolk.

CALAMEUTA.—Our species is called by Konow *filiformis*, Ev. (= *arundinis*, C.).

It is unlike most species in having the middle abd. segments (3 to 6) *uniformly* margined with narrow yellow fasciæ. It is rather larger than *pygmæus*, with a stronger puncturation, more slender antennæ, and the hind legs dusky both within and without. Thomson and Cameron further distinguish it by the presence of a single spine only on the hind tibiæ, but this character does not always hold good.

I have three ♀ specimens taken this year either in Wales or the West of England by Colonel Yerbury, and have examined several of both sexes in the British collections at S. Kensington.

TRACHELUS.—Our one species, *tabidus*, F., apart from its generic characters, differs from anything else which occurs here in its coloration. In both sexes the abdomen is black and unbanded above, but, as it were, *streaked laterally* with a row of brownish-yellow triangular patches, which sometimes become confluent. The long antennæ are very thin till near the apex, when they dilate conspicuously and become subclavate. I have taken it near Deal and at Swanage.

The above are all the *Cephini* for whose occurrence as British I can vouch. In the S. Kensington collections (Stephens, &c.) several other names occur, but the insects to which these are attached all belong, if I mistake not, to species dealt with above. I have looked through them all, and feel no doubt as to the following identifications:—

*analís* (B. M. coll.) = *filiformis*, ♀.

*pusillus* (B. M. coll.) = *pallipes*, ♂.

*immaculatus* "type" (B. M. coll.) = *pallipes*, ♀. (Another specimen so called is apparently a *tabidus*).

*floralis*, Kl. (B. M. coll.), = *pallipes*, 4 ♂♂, and *pygmæus*, 1 ♀.

*5-fasciatus* = *linearis*.

*trogodyta* = *satyrus*.

*C. nigrinus*, Thoms., and *C. hæmorrhoidalis*, F., have been thought to occur in England, and perhaps they do so. But I have never seen a British specimen of either, and there are certainly none in the British collections at S. Kensington. (Stephens's description of "*analís*," ♀, as Konow points out, suits *hæmorrhoidalis*; but the insect which is supposed to be his "type" has a yellow-banded abdomen, and is—as I have already said—a ♀ of *filiformis*).

*Coleoptera in the Lea Valley, 1903.*—During the first six months of the present year ill-health prevented me from paying much attention to entomology; I may, however, mention the capture during this period of a specimen of *Deleaster dichrous*, Grav., which flew into the house on a warm still evening in April. In the same month, at Cheshunt, I noticed a few examples of *Hypera pollux*, F., v. *alternans*, Steph. After Whitsuntide I was able to resume operations, and among my recent captures there are many species which have not been met with by me in previous years in the Lea Valley. From a gravelly pasture at Edmonton I got a nice series of *Cercyon obsoletus*, Gyll., though never more than one or two on any single visit; with it eight other *Sphæridiinae* occurred. *Aphodii* seemed unusually abundant this summer, and I met with four species not previously noticed here: *A. fetens*, F., was common in July at Broxbourne, where sheep dung produced a few *A. pusillus*, Herbst; at Edmonton *A. sordidus*, F., was to be found in dung throughout July and August, and flew in great numbers at dusk; *A. porcus*, F., two in horse dung, each of them close to the mouth of a boring of *Geotrupes stercorarius*. *Hister unicolor*, L., which I had not seen since 1899, turned up singly in dung on Chingford Marsh, and a few *H. purpurascens*, Herbst, under vegetable refuse in a cultivated field at Edmonton, where I also got a single example of *Gnathoncus nannetensis*, Mars. I was sorry to find that the habitat of the colony of *Hister merdarius*, F., at Broxbourne (cf. Ent. Mo. Mag., 1902, p. 268) had been practically destroyed, and its occurrence there again is very doubtful. Sweeping at Edmonton produced *Phyllotreta consobrina*, Curt., and *Ochina hederæ*, Müll., both rarely, and *Pseudostyphlus pilumnus*, Gyll., one only, from *Matricaria*, in a spot where in 1901 I took a large number. Brushing at dusk in a grassy place under elm trees on the Essex side of the Lea at Cheshunt on June 27th produced half a dozen specimens of *Onias mollinus*, Boh., and in the vicinity I beat four *Anthocomus fasciatus*, L., out of a hedge; on the Hertfordshire side of the river I got a few *Tanymecus palliatus*, F., by sweeping, and a few males of *Magdalis barbicornis*, Latr., from a hawthorn hedge near the railway. In *Linaria* flowers at Broxbourne, *Brachypterus gravidus*, Ill., was in abundance early in August, and by sweeping the numerous bushy plants of *Malva*, which form quite a feature of the riverside flora there, a few *Podagrica fuscipes*, L., turned up, besides the usual *Apions* (*æneum*, F., *radiolus*, Kirby, and *rufirostre*, F.) in great numbers, while in a backwater *Donacia sparganii*, Ahr., was to be seen, basking on the leaves of *Nuphar lutea*. On August 16th, at Palmer's Green, I met with several of the curious little *Leptinus testaceus*, Müll., running at the entrance to a rodent's hole at the base of an oak, and in fungus close by *Triphyllus suturalis*, F., in all its stages, occurred. In a grain and seed merchant's shop at Edmonton, during the same month, *Niptus crenatus*, F., was in abundance, but rubbed, and a few fine fresh specimens of *N. hololeucus*, Fald., were found, apparently quite at home, at the bottom of a box of "shell gravel;" I also got here several examples of a species of *Ptinus*, or of a genus allied to it, which does not appear to have been hitherto recorded from this country. I understand that this insect has been met with by others, and that attempts are being made to identify it.—F. B. JENNINGS, 152, Silver Street, Upper Edmonton, N.: October 7th, 1903.

*Coleoptera at Guildford and Godalming.*—On August 22nd I found two speci-

mens of *Omalius septentrionis*, Thoms., in a very putrid fungus on the Downs near Guildford. Unfortunately the species was not recognised at the time, or doubtless more could have been secured: it has not hitherto been recorded from the south of England.\* On the same day three males of *Anisotoma Triepekei*, Schmidt, were swept from coarse grass on the open slopes, an insect not previously seen by me away from pine woods (Woking and Fleet), and which has quite disappeared from its old locality here. On May 23rd the following species were taken near Godalming:—*Copris lunaris*, L., in horse dung; *Bledius subterraneus*, Er., in plenty on the wing in a sandy place in the evening; *Tachyusa umbratica*, Er., *T. constricta*, Er., by the Wey; *Enicmus testaceus*, Steph., in fungoid growth on a tree stump; *Ceuthorrhynchus setosus*, Boh., by sweeping; *Philopodon geminatus*, F., in a sand-pit, a common seaside species, previously recorded by me from Guildford, and also met with last year at Witley. *Prionus coriarius*, L. (♀) was found on a rotten ash tree at Guildford on October 7th, and *Colon dentipes*, Sahlb., in the same neighbourhood on September 19th.—G. C. CHAMPION, Horsell: October 8th, 1903.

*Coleoptera from Berkshire*.—Since my last report in the July number of the Entomologist's Monthly Magazine, I find that I have added nearly fifty new species of *Coleoptera* to the Berkshire list, some of which I think are worth recording. Beetles have certainly not been quite so reduced in numbers since July as one would have been led to expect from their great scarcity earlier in the year. Although the number of individuals in one's sweeping net has been generally extraordinarily few, some interesting species have occasionally found their way into it, including single specimens of *Cryphalus fagi*, Nord., *Axinotarsus ruficollis*, Ol., *Aspidiphorus orbiculatus*, Gyll., *Anisotoma ovalis*, Schmidt, and *Abdera bifasciata*, Marsh. These last three and two *Amphicyllis globus*, F., were swept from short wet grass in woods in the evening. I took, last year, by sweeping in the same way, three specimens of a *Colon* I was unable to identify, but now have been able to make them out as *Colon dentipes*, Sahl., two fine males occurring in the same wood this year.

I have on several occasions visited the numerous *Cossus*-infested trees in the neighbourhood, and have found all my usual captures, but in much diminished numbers. Three new species have also turned up: *Atomaria elongatula*, Ev., *Philonthus fuscus*, Grav., and *Quedius ventralis*, Ar. This latter I have also taken under bark and in a mouse's nest.

In the immediate neighbourhood the other species of interest I have taken are *Enicmus testaceus*, Steph., in a puff-ball on a tree; and *Mycetoporus clavicornis*, Steph., and *Trichopteryx dispar*, Matth., by sifting dead leaves. *Mordellistena humeralis*, L., and *M. brunnea*, F., occurred in some numbers in one wood on *Umbelliferae*.

My favourite wood in the Streatley neighbourhood, where I have taken *Diplocælus fagi*, Guér., and other New Forest species, has always been worth visiting. *Enicmus brevicornis*, Mann., once occurred in large numbers on a dead beech tree. *Tillus elongatus*, L., was taken on another occasion. *Anommatus 12-striatus*, Müll., was found under an old log; *Aleochara cuniculorum*, Kr., in rabbit holes; and *Neuraphes angulatus*, Müll., under bark.

\* cf. Ent. Mo. Mag., xxxviii, p. 268.



Two visits to the Aldermaston district added several new species to my Berkshire list, one *Aphanisticus pusillus*, Ol., and several *Chaetocnema subcærulea*, Knts., both by sweeping in damp sedgy ground, being the most worthy of mention. Three *Elater elongatulus*, Ol., were turned up in nearly the same district in rotten fir stumps, in just such a place as one usually finds *E. balteatus*, L. Canon Fowler records it from oak only.

A few visits to the Wellington College district has been very productive, especially as regards ants'-nest beetles. Five species of *Myrmedonia* occurred in the nest and runs of one colony of *Lasius fuliginosus*, and *Notothecta confusa*, Märk., was taken by packing another nest close by. Nearly thirty specimens of *Dinarda dentata*, Grav., were taken from a nest of *Formica sanguinea*. *Aleochara mærens*, Gyll., was quite common in decaying fungi under fir trees, and one *A. mycetophaga*, Kr., turned up with it. *Mycetoporus lucidus*, Er., and *M. angularis*, Rey, were sifted from moss; and *Acupalpus flavicollis*, Sturm, was taken by searching the rushes at the edge of the pond.—NORMAN H. JOY, Bradfield, near Reading: October 11th, 1903.

*Meligethes exilis*, Sturm, in the Isle of Man; with notes on the flowers it frequents.—At the end of August, 1901, I took a number of specimens of a small black *Meligethes* in the flower heads of *Senecio jacobæa* at Glen Wyllin, Kirk Michael, which the Rev. H. S. Gorham kindly named for me as *Meligethes exilis*, Sturm. During July and August, 1902, I met with the same species in flower-heads of *Hieracium pilosella* growing on the cliffs of Spaldrick Bay, Port Erin, and during August and September, and as late as October 11th, they occurred on *Senecio jacobæa* both at Spaldrick and neighbouring cliffs, near Port Erin. During the present year I have made special observations as to the times of occurrence of this species and the flowers which it frequents. The first specimens I noticed were one or two in flowers of *Polygala vulgaris* at Spaldrick on May 25th. On May 28th several specimens occurred in flowers of *Ranunculus bulbosus* at Spaldrick. On June 1st, at the old racecourse at Derbyhaven, I found it abundantly in flowers of *Thymus serpyllum* buried head downwards in the corollas. On June 3rd, at Spaldrick, it occurred in flowers of *Ranunculus bulbosus*, *Potentilla anserina*, *Lotus corniculatus*, and *Armeria vulgaris*, and some days afterwards on *Thymus serpyllum*. On July 1st I found it on *Senecio jacobæa* just then coming into flower, and from then up to the present date it has occurred almost exclusively on this plant, except now and again during July and August on *Hieracium pilosella*, which did not flower so freely at Spaldrick as in 1902; and on one occasion, August 25th, half a dozen examples occurred on a plant of *Achillea millefolium*. To-day I found a couple of specimens on *Matricaria inodora*, a plant which flowers profusely at Spaldrick, and on which I had never before met with it. *Meligethes exilis*, Sturm, is recorded in Fowler's "British Coleoptera," from the Isle of Man (Rev. R. P. Murray), and Mr. Murray tells me in a letter that it is about forty years since he collected in the Isle of Man, and he does not recollect the locality in which he took this species. It is one of the very few species of *Coleoptera* in the Isle of Man which have not been recorded as occurring in Ireland, and it is a species we should certainly expect to turn up there, its range in the British Isles being rather of a south-west and westerly nature: Plymouth, Instow, Tenby, Barmouth, Isle of Man, Galloway (Scotland).—J. HAROLD BAILEY, Port Erin, Isle of Man: Oct. 4th, 1903.



*Machærites glabratus*, Rye, at Charing, Kent.—A single specimen of this rare insect was taken on August 2nd by my friend Mr. Claude Morley by shaking long moss growing on a hot chalk declivity. It occurred with the very local ant, *Ponera contracta*, with which Mr. Morley suggests it probably associates.

In the translation of "Reitter's Tables" in "L'Abeille" (*Paussides*, &c., p. 53, 1883) the anterior femora of *glabratus* are stated to be without denticulations on the under-side. In Mr. Morley's specimen, which seems to agree well with Rye's original description (*Ent. Mo. Mag.*, vol. vii, p. 33), the anterior femora are plainly denticulated. The question thus arises, is it a sexual distinction, is Reitter in error, or have we a second British species of *Machærites* closely allied to *glabratus*? The rarity of the species prevents my being able to solve these questions.—E. A. NEWBERRY, 12, Churchill Road, N.W.: October 16th, 1903.

*Homalium testaceum*, Er., near Ipswich.—A fine male of the above was taken by Mr. Morley at the roots of plants growing on a bank by the roadside—a mere cart track through a field—at Witnesham, near Ipswich, on June 30th, 1903.—ID.

*Laphygma exigua* near Chelmsford.—On September 23rd I was rather surprised at taking four specimens of *L. exigua* at light near East Hanningfield. I have used a light about twice a week in September for about ten years in this locality, but the insect has never turned up before. One was much worn, and one in excellent condition, the other two being fairly good.—W. C. BOYD, The Grange, Waltham Cross: October 13th, 1903.

Concerning an old record of *Chariclea delphinii* in England.—It may perhaps be well to place on record that the specimen of *C. delphinii*, caught by Mr. Jones in his garden at Chelsea (*vide* Barrett's "British Lepidoptera," vol. vi, p. 145) is in my collection. From Mr. Jones's collection it passed to Mr. Druitt, who, in turn, presented it to Mr. J. N. Winter, formerly of Brighton, from whom I received it some years ago; it must be now more than a hundred years old.—ID.

*Chærocampa Celerio*, &c., in the Midlands.—The occurrence of *Ch. Celerio* is sufficiently rare to warrant the notice of its capture in the Midlands. On October 8th, 1900, I was informed that a large moth had been secured for me creeping up the cloth of a supper table in a farmhouse on the borders of Staffordshire and Shropshire. Unfortunately, by passing through two or three hands, the specimen was rather damaged before it reached me, but from its general appearance there was no doubt that the insect had only recently emerged. I was delighted to find it was *Ch. Celerio*; it is interesting to note that its food plant, Virginia Creeper, was growing up the house just outside the window. Unfortunately I was unable to pay a visit to and investigate the spot, in the chance of finding either pupæ or perfect insects. *Acronycta alni* has occurred here in the larval state; one in my own garden crawling along a path, and a second under beech leaves in one of the village streets. My son took *Cirrhædia xerampelina* last autumn off the trunk of an ash.—ARTHUR T. WILLS, Brewood, Stafford: September 20th, 1903.

A swarm of *Vanessa cardui*.—Even where not themselves eye-witnesses of the fact, readers of the daily newspapers, &c., have become aware of the sudden

appearance of large numbers of *U. cardui*, especially in and about London, at the end of September. We have not taken much trouble to seek details, but, so far as we can learn, their dispersal seems to have been northern and eastern rather than western. At any rate, we have ascertained that no unusual quantities were observed at several places on the coast of South Devon. Many of our readers will remember the extraordinary abundance of the species in "spring and early summer" in the year 1879 (*cf.* Ent. Mo. Mag., xvi, pp. 49—51); they will also remember that 1879 was a "record" year for wet and absence of sunshine. That 1903 may beat 1879 for rainfall is very probable, but in the matter of sunshine it has not been so bad, and we do not think any deductions of scientific value can be drawn from the coincidences; moreover, the swarms of 1879 were of a different "brood," and probably came from much further south.—EDS.

*Nomada guttulata*, Schk., *Psen concolor*, Dalb., and other Aculeates from East Kent.—This has been the worst year for Aculeates of the ten years during which I have collected in East Kent. No period has been satisfactory. Still I have one great rarity to record, and several species have turned up not previously noticed by me here. The great rarity is *Nomada guttulata*, Schk., of which I have taken a single ♀ and two ♂♂; unfortunately, I caught them just before leaving to collect with Mr. Morley at Brandon, and, being unable to identify them at the time, they were put away and recently named for me by Mr. E. Saunders. The ♂ is new to Britain. The only previously captured females are, I believe, one in Mr. Saunders' collection without locality, and one taken by Mr. Morley as recorded in Ent. Mo. Mag., xxxiii, p. 280. Another interesting *Nomada* taken here this year is *ferruginata*, Kirb. I found the ♂ on 30th May, the ♀ on 28th June. Unfortunately, I can throw no light upon the hosts of either of these insects, though I have no doubt that *ferruginata* occurred with *Andrena humilis*, which I took on May 24th. Against these captures it is worth noting that the autumn *Nomadas*, *solidaginis fucata* and *jacobææ*, so abundant last year, have been entirely absent, and I have no August records of the common *Andrena fulvicerus*, upon which two of them appear to be *inquiline*. Whether they are holding over or whether the inclement weather and cold of last year prevented the parent bees from providing for their young, remains to be proved; remembering that *N. fucata* appeared for the first time last year, and then in some numbers, and that I then found a single female at Kingsdown, where Mr. Sladen had never seen it before, I cannot help thinking that the insect may only emerge at uncertain intervals. Of other bees taken by me for the first time here, are *Andrena Hattorfiana*, Fab., of which I saw several specimens at the beginning of August; so that I hope it may have established itself as *Megachile maritima*, Kirb., has done since last year. Of *Podalirius*, Lat. (*Anthophora*), *furcatus*, Panz., I have bred two ♀♀ from a piece of hurdle found in October, 1902; the ♂♂, if there were any, escaped, owing to my cage being interfered with. I have also, for the first time here, found *Nysson spinosus*, Fab., and *Pompilus niger*, Fab., besides *Trypoxylon attenuatum*, Sm., from the Blean Woods. Mr. Saunders has also kindly identified for me a specimen of *Psen*, taken at Doddington in 1896, as *concolor*, Dalb. This appears to be the fourth British specimen recorded. — ARTHUR J. CHITTY, Huntingfield, Faversham, Kent: September 30th, 1903.

*Ponera contracta*, Latr., at Charing Hill, Kent.—On August 2nd last Mr. C. Morley accompanied me to my previously recorded locality at Charing to look for this rare ant, and we soon found it in moss on the hill side. Subsequently while searching under stones for *Coleoptera* Mr. Morley came across a small nest or deposit, consisting of some twenty-five or more pupæ, with a fair number of attendant ants, not, however, so numerous as the pupæ. I dug up the nest with a trowel, carried it home in my handkerchief, and placed it in an inverted glass shade about 4 inches in diameter and 6 inches deep; meantime the ants carried the pupæ into the earth, and they never appeared again until the nest was broken up. I fed them with sugar and dead insects, but I cannot say for certain whether they eat either, though I thought the inside of a earwig was devoured. A certain number of small flies and ichneumons from time to time came out of the earth, but these probably had no connection with the nest.

In the beginning of September, thinking they were possibly all dead, I removed the sod of earth, but seeing two ants alive replaced it, and on September 20th I finally took out the earth and broke it up to discover what had occurred. There was, so far as I could ascertain no regular nest remaining, and all the pupæ had hatched. The wingless queen and most of the ants were just beneath the surface in the roots of the grass; there were two ♂♂, one with wings undeveloped or injured, the other perfect, and some twenty workers. I believe this is the first record of the nest of the ant from Britain.

On August 31st I found another small deposit of pupæ at Charing, and a few ants. This nest had been weakened by the ants captured in the adjoining moss by myself in July, and by Mr. Morley in August. I took the nest home, and tried keeping them in damp moss, but this was a failure: one or two workers emerged, and several small parasitic *Hymenoptera* were bred from time to time, but the ants died, and the pupæ withered up. There was no queen in the nest which we found near a nest of *Myrmica rubra*. At one time I thought it might be a mere deposit of pupæ brought out to hatch. The pupæ in both cases were under a stone; they were rather dark brown in colour when first found, but seemed to get lighter; the newly emerged ant is very light in colour, like *L. flavus*.

A third nest of the species has also been found by me near Doddington, without pupæ. This I have left; in this case there were two or three workers under a stone, with evident traces of very fine galleries drilled by the ants, which went down into the earth in a very deliberate fashion on being disturbed. A dead *Ponera* about a foot off had apparently been killed by a *L. niger*, of which there was a strong nest near. It is difficult to see how this curious little ant lives; its movements are very slow, and it is always in my experience (I have found it also at Chatham) to be taken in places where other species abound. I have never found any signs of larvæ. It generally occurs in little parties of two or three ants. It may be that the larvæ are hatched or fed in or about the nests of another ant, but the dead ant found at Doddington is, I suppose, against this view. I should be much obliged if any one could refer me to any notes by a continental authority on the habits of this ant, which was, I believe, never found by F. Smith, though he searched diligently for it: see his work on Fossorial *Hymenoptera*, p. 20. Its head quarters seem to be Kent, east of the Medway,\* as I know of three localities.—ID.: Oct. 5th, 1903.

\* It is curious to note also that all the genera of *Myrmicidæ* occur within these limits.—A. J. C.

*Myrmecina Latreillei*, Curt., and *Stenamma Westwoodi*, West., in East Kent.—In September I went over to Doddington to look for ♂♂ of *M. Latreillei*, and found 2 or 3 by sweeping in long grass about 3 p.m. It was a beautiful afternoon. It was not possible to search for nests when I swept the male, but I have previously found the worker in small parties of 3 or 4 in this locality. I mistook them, and am afraid I have recorded them as *Tetramorium*, which has not yet occurred here, though I have it from a very similar locality at Chatham. I have also taken a fine ♀ of this insect, which flew into my garden and settled on a stone slab. I have previously found the worker here, but it seems very scarce. Possibly I may have overlooked it, as it is not unlike *Leptothorax acervorum*, which is common here, and may easily be mistaken for a small *Myrmica* until the head is examined.—ID.

*Vespa austriaca* in a nest of *V. rufa* at Forres in 1892.—Messrs. Carpenter's and Pack-Bercsford's interesting article on these two wasps has led me to examine my specimens of *rufo*, most of which came from a nest taken at Forres in 1892, as recorded by me in the Ent. Mo. Mag., vol. xxix, p. 92. At the time of finding the nest I was ignorant of the structural characters which distinguish the two, but I noticed that some of the wasps had the colorations of *austriaca*, and was inclined so to name them. The colouring of *rufo* was, however, so variable in the specimens, that I put them in as *rufo*. Mr. Saunders has now kindly identified two ♂♂ of *austriaca* among my specimens. I cannot be sufficiently certain of the facts under which they occurred to draw any conclusions, but I believe they occurred in the nest taken by me as previously described.—ID.

*Hymenoptera Aculeata in the New Forest*.—Owing to the wet weather, this summer has proved to be a poor season for most Hymenopterists. However, during three months spent in the New Forest, from June 22nd to September 15th, I managed to capture amongst others the following species, some of which, I believe, have not been hitherto recorded from that locality:—

One *Didineis lunicornis*, ♀, in August, running amongst tufts of grass. Two ♀ *Mutilla europæa*, Linn., one in a gravel pit, and three ♂ of same (September) on *Angelica* in bogs. *Methoca ichneumonides*, Ltr., ♀, plentiful from June to end of July on a sandy bank. One *Sapyga 5-punctata*, Fab., burrowing in sand. Five ♀ *Pompilus unicolor*, Spin., and one ♂, these were fairly common in one or two sandy places, but difficult to catch; 1 ♀ *P. spissus*, Schiödt. *Salix affinis*, V. de Lind., seven ♀, three ♂, from July to middle of August, on a sandy bank; *S. obtusiventris*, Schiödt., one ♂. *Astutus boops*, Schr., plentiful on the sandy bank mentioned above, ♂ appearing two to three weeks earlier than the ♀. *Mimesa Shuckardi*, Wesm., and *M. bicolor*, Fab., both very common, August and September. *Gorytes tumidus*, Panz., several ♀ in August, only in the hottest sunshine. *Andrena Cetti*, Schrank, late August, three ♀, burrowing in a very hard gravelly path. *Macropis labiata*, Fabr., ♀ fairly plentiful, ♂ rarer, on *Lysimachia* in the bogs. *Nomada Roberjeotiana*, Panz., one ♀, July, flying over heather. *Osmia leucomelana*, Kirb., two ♀, burrowing in an old paling. *Stelis phaeoptera*, Kir., three ♀, with *O. fulviventris*, from an old paling. *Crabro interruptus*, De G., four ♀, August and September, on *Angelica* blooms; *C. peltarius*, Schreb., one ♀, August, on *Angelica*; *C. Panzeri*, V. de Lind., one ♂. Other species were taken, but I do not think any of them are worth recording.—G. ARNOLD, Royal College of Science, South Kensington: October, 1903.



*Labia minor*, L., at the end of September.—At the foot of the exit path from the railway station here is a stable with the usual surroundings, including dung-hill, &c. On passing this on one of the sultry afternoons that prevailed in the last week in September, I saw quite a swarm of flying insects which at first I mistook for winged ants, but on catching one of them in my hat, found they were *Labia minor*. This small earwig is usually common enough about roadside dung-heaps round London in summer, and ordinarily lasts only a short time on the wing, but never before have I seen it so late as above stated. Possibly the absence of real summer weather this year may have had something to do with its very late appearance.—R. McLACHLAN, Lewisham, London: October 8th, 1903.

*Neuromus maculipennis*, Gray, not an American species.—I have just received through the courtesy of Dr. Felt, the State Entomologist for New York, a copy of Bulletin 68 (Entomology 18) of the N. Y. State Museum, which treats especially on the "Aquatic Insects in N. Y. State." Amongst other contributors, Dr. R. C. Davis deals with (Pt. 7) the *Sialididæ* of N. and S. America. I have already found this of considerable service, much as I disagree with some systematic points and some formalities in the descriptions. There is an important error which should be corrected as soon as possible. At p. 468 is a description under the heading "*N. maculipennis* (sic!), Gray," with the locality "Brazil." This insect is common enough in Java and Sumatra, and probably elsewhere in the East, but is not American. The error can probably be traced out by Prof. Davis's synonymy. There we find *Corydalus illota*, Hag., which was used by Hagen to indicate some species said to come from Brazil which was never described. If "*C. illota*, Hag.", be really the same as *N. maculipennis*, Gray, there must be some error in the locality label. Or "*illota*" may possibly represent another species, for the description does not accord very well with *N. maculipennis*.—ID.

*Psocidæ* at Margate in 1903.—For reasons connected with the health of a member of his family, my friend and colleague, Mr. E. Saunders, was compelled to stay at, or visit, this popular resort on several occasions in the latter half of September and beginning of October. Thinking he would not find much to interest him in his own specialities (which proved to be the case), I suggested he might look for *Psocidæ*, and he captured the following species, amongst which are more than one of considerable interest: possibly no species have been hitherto recorded from the Isle of Thanet.

*Psocus variegatus*, Latr. (3); *Ps. sexpunctatus*, L. (1); *Ps. quadrimaculatus*, Latr. (3).

*Stenopsocus* (*Graphopsocus*) *cruciatus*, L. (17), nearly all females, which present every gradation of wing-development down to an amount of abbreviation quite equivalent to that shown in the example described by Reuter as *Teratopsocus maculipennis* (cf. Ent. Mo. Mag., 1900, pp. 6—7).

*Elipsocus Westwoodii*, McLach. (1).

*Cæcilus flavidus*, St. (9); *C. (Pterodela) pedicularius*, L. (15), showing considerable variation in size, and in the form of the "areola postica," but apparently not of specific importance; *C. (Trichopsocus) Dali*, McLach. (4).

*Ectopsocus Briggsi*, McLach. (6).



Of the above, *Ps. quadrimaculatus* and *E. Briggsi* may be looked upon as the best captures. But the latter will probably be found where looked for in the South of England (and, perhaps, further north) in autumn and early winter. Mr. Guermouprez, of Bognor, seemed to think it had some connection with N. American poplar (*cf.* Ent. Mo. Mag., 1902, p. 288), so I requested Mr. Saunders to pay attention to the matter; the result was negative; there was no poplar growing where he found the insects amongst rubbish and fallen leaves generally.—ID.: *October 7th*, 1903.

## Review.

THE BUTTERFLIES OF SWITZERLAND AND THE ALPS OF CENTRAL EUROPE: by GEORGE WHEELER, M.A. Pp. vi and 162, 8vo. London: Elliott Stock, 1903.

This very useful little book is intended for the evolutionary prototype of the British butterfly collector of former days, who annually invades the "Alps," much to his advantage, instead of limiting his knowledge to the products of the British Islands only. It is not a scientific book, and does not pretend to be such. In the larger divisions (such as *Papilionidæ*, *Limenitidæ*, and *Satyridæ*, &c.) no attempt is made to give the essential structural characters on which such divisions are founded; nearly everything depends upon colour and markings; in fact, the "descriptions" as such, are mainly confined to varieties and aberrations, named, and in endless quantity in some cases. We do not intend here to enlarge upon the necessity or advisability of creating strings of such names, further than to remark that in the cases of "aberrations" (often unique) the necessity seems more than doubtful; and in some cases an apparently paradoxical distinction is drawn, inasmuch as a "variety" of a species in one locality may be nothing more than an "aberration" in another. But the collector will gladly welcome the indications of local variations, and these are the main features of the book, which could not have been put together save by the experience of a worker such as the Rev. Mr. Wheeler, to whom the Alps and their butterfly productions are so familiar. The local information is very full: in the genus *Erebia* (and we think there only) there is a summary of the species indicated by altitudes. In a second edition, or extension, of the book, it might be well to make the very ample index of localities still more useful by adding the approximate altitude to each place named; the difficulty of this, in the case of mountains, passes, and valleys, could no doubt be surmounted by a little ingenuity. There are no illustrations.

## Obituary.

*Frederick Bates, F.E.S.*, a younger brother of H. W. Bates, F.R.S., "The Naturalist on the Amazons," died at his residence at Chiswick on October 6th, after a severe illness of several weeks' duration. He was born at Leicester on November 18th, 1829, and resided in or near that town until 1896; he was connected with a brewery at Leicester, which was formed into a company of which he was managing director until recently. Like his brother, his early taste for entomology exhibited itself in the study of British beetles, but it is probable that other occupations gave him too little time for a considerable period. Well on for 40 years ago he took up the study of *Heteromera* (especially *Tenebrionidæ*) seriously, published many papers

thereon, and formed an extensive collection, which was afterwards purchased by the British Museum. Then for a few years he devoted himself to the culture of orchids; but abandoning this he formed a collection of *Cicindelidæ*, and latterly a very extensive one of British *Coleoptera*, thus returning to his early inclinations. Without having made a scientific reputation comparable with that of his more celebrated brother, he had the same intense love of Natural History, and, to Londoners, a characteristic provincialism which his brother, after all his adventures, never entirely lost. Personally he will be much regretted, and most of all by the widow and family, who deplore their loss. He joined the Entomological Society of London in 1867, in the then-existing class of "Subscribers," but subsequently withdrew; in 1897 he was elected a Fellow, and remained such.

## Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: September 21st, 1903,—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. J. T. Fountain showed a series of *Adopæa Acteon*, Rott., taken this year on the south coast, also *Dianthæcia albinacula*, Bkh., *D. cucubali* (S. V.), Füsssl., and *D. carpophaga*, Bk., all from the same locality. Mr. A. D. Imms, a specimen of a *Trichiosoma* from Montgomeryshire, which he said did not appear to be the common *cratagi*. Mr. Bethune-Baker, a box of *Lycanidæ* from Queensland, chiefly species which were associated with ants; and including larvæ, pupæ, and specimens of the associated ants in a few cases. He gave many interesting particulars of their life histories, which had been communicated to him; also a beautiful set of *Lycanidæ* from Sierra Leone, which he had just received, and which included some new species.—COLBRAN J. WAINWRIGHT, Hon. Sec.

Correction.—In the report of the meeting of this Society on February 16th last (Ent. Mo. Mag., xiv [2], p. 103) the species of *Ogyrius* then shown were spoken of as "ant-feeding Lycanids." It was not intended to imply that they fed upon ants, only that they lived in association with ants, the loose expression "ant-feeding" is however obviously likely to convey a wrong impression.—C. J. W.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, August 13th, 1903.—Mr. E. STEP, F.L.S., President, in the Chair.

Mr. Goulton exhibited (1) a short series of *Hypsipetes sordidata* (*elutata*) from Ranmore Common, including a bright green, very black, barred form, and a wholly dusky form; (2) a short series bred from ova of the above, and stated that all the bred ones were lighter than the captured ones; (3) a yellow form from the Isle of Wight, with yellow eyes. Mr. F. M. B. Carr, a large number of species of *Coleoptera* taken at Salisbury and in South Devon. Mr. Ashby, series of the local species *Harpalus caspius* and *H. sabulicola* from Portland in June. Mr. McArthur, *Cossus cossus* (*ligniperda*), one of a number seen around the electric light in King Street, Hammersmith. Mr. R. Adkin, a bred series of *Eupithecia exigua* from Brighton, one half of the larvæ were fed on willow, and the other on ash. Mr. West, of Greenwich, the three British representatives of the genus *Acalles*, taken at Darenth Wood, by beating dead oak twigs in July. Dr. Chapman, (1) nearly full-fed larvæ of *Nisoniades Tages*, from ova laid on *Lotus corniculatus*; (2) a larva

of *Orgyia splendida* from Spain, and pointed out its differences from *O. antiqua*; (3) a living example of *Parnassius Apollo* from Spain, exactly like the usual Swiss form, and characteristic of the district of Spain he had just visited. Mr. H. J. Turner, (1) larvæ of *Phibalapteryx tersata* from ova laid by a ♀ captured at Wendover on July 11th; (2) larvæ of *Spilosoma fuliginosa* from ova, and remarked on the irregular way in which they were feeding.

August 27th.—The President in the Chair.

Mr. R. Adkin exhibited a variety of *Limenitis sibylla*, in which the white markings were somewhat reduced in size, and partially obscured by a dusting of black scales, together with a var. of *Cleora glabraria*, in which the basal third of the fore-wings was very dark. Both were from the New Forest. Mr. Step, a very large Heteropteron, *Belostoma grande* from Trinidad, where it is known as the "Electric eel." Mr. West, the 3 British representatives of the Heteropterous genus *Pilophorus*, all from Oxshott, viz.:—*P. cinnamopterus*, on pines, *P. perplexus* and *P. clavatus*, on oak. Mr. Hare, a variety of *Acidalia aversata*, with the posterior half of both fore- and hind-wings suffused with fuscous. Mr. Dodds, several curiously streaked ♂ specimens of *Ocneria dispar*; he had inbred the species for the last three seasons, and had not previously met with this variation. The streaks were the colour of the female, and very far from being symmetrical. Mr. Garrett, a ♂ specimen of *Porthesia similis (auriflua)* only half the usual size, taken at Wimbledon, and a ♀ *Polyommatus corydon*, with several blue marks along the costa of the right fore-wing, forming a broken streak: it was taken at Purley. Mr. West and Mr. Ashby reported that they had been warned out of the open sandpit on Oxshott Heath while searching for *Coleoptera*, because "it interfered with the birds getting their evening meal." Mr. F. M. B. Carr, (1) a collection of *Lepidoptera* made this season in the Salisbury district, including *Eugonia polychloros*, *Nemeobius lucina*, *Lithosia sororecula (aureola)*, *Eutricha quercifolia*, *Notodonta dictæa*, *Plusia moneta*, *Eurymene dolabraria*, *Cleora lichenaria*, *Minoa euphorbiata*, &c.; (2) a bred example of *Cabera pusaria*, var. *rotundaria*, and (3) a series of *P. moneta*, bred from Northwood larvæ, together with yellow and white cocoons. He said that white cocoons dipped in water became yellow; he also noted that some 60 ♂s of *Orgyia antiqua* had assembled to a bred ♀ in two days.

September 10th.—The President in the Chair.

Mr. Garrett exhibited a specimen of *Pyrameis atalanta*, with the red sub-marginal band of the hind-wings marked with yellow spots; it was bred from an Arundel larva. Mr. Goulton, a larva of *Coleophora limosipennella* found feeding on birch at Oxshott, and also photographs of various larvæ, including *Cucullia verbasci*, *C. lychnitis*, *Jocheæra (Acronycta) alni*, *Pterostoma palpina*, &c. Mr. Adkin, a series of *Zonosoma linearia* reared from West Sussex ova; he referred to the varieties exhibited, and pointed out a specimen in which occurred a small wedge-shaped dark mark extending inwards from the central line of the fore-wings. Mr. Main, examples of three species of New Zealand butterflies, including *Pyrameis gonerilla*, the close ally of our *P. atalanta*. Mr. Carr, larvæ of *Melanthia albicillata* and *Cosmotriche potatoria*, and stated that he had a larva of the latter species which apparently intended to go over a second winter; a discussion ensued. Mr. West (Greenwich), a series of the Homopteron, *Gargara genistæ*, which he had taken on broom at Oxshott. At first the males were in great preponderance, but later on the females were much the more numerous. Mr. Clarke, photographs of the ova of *Eutricha quercifolia*. Mr. Carpenter recorded the fact of the pairing in captivity of bred *Pararge ægeria* by Mr. Joy; they were enclosed in a bandbox covered with lino, and exposed to the full sun.—H. J. TURNER, Hon. Sec.

*VANESSA CARDUI* AND OTHER INSECTS AT THE KENTISH KNOCK LIGHTSHIP.

BY WM. EAGLE CLARKE, F.R.S.E., F.L.S.

With the permission of the Elder Brethren of the Trinity House I spent thirty-one days (September 17th to October 18th) on the Kentish Knock Lightship, for the purpose of making observations on the migrations of birds, a subject in which I am specially interested. During the fine weather that characterized the latter part of September a considerable number of insects appeared on board the ship, a few of which I captured. Among them were several specimens of *Vanessa cardui*, which, strange to say, were secured as they fluttered with others of their kind against the lantern, from 8.45 p.m. to midnight on September 22nd, and I saw a number flying round the vessel on the following day. These remarkable facts may perhaps explain the recent abundance of this species on the east coast of England and elsewhere in Britain during the past autumn, since they decidedly point, in my opinion, to immigration from the Continent; and this view is further supported by the fact that the wind at the time was south-easterly and light.

The Kentish Knock Lightship is situated in the North Sea, N.E. of the mouth of the Thames, 21 miles from the nearest points of the land, which are Margate and the Naze (Essex), and lie respectively S.W. by W. and N.W. from the vessel. The nearest points to the Continent are the northern coast of France and the Belgian coast, which are distant from 48 to 56 miles, and lie S.S.E. and S.E. from the Lightship.

On September 23rd, in addition to the butterflies, there came a number of *Plusia gamma* and hundreds of small Trichopterous insects, which my friend Mr. Kenneth J. Morton has determined as *Limnophilus griseus*, L., and *L. affinis*, Curtis. The presence of these latter is also strongly suggestive of migration from the Continent, for it is scarcely possible that such delicate insects could have flown for at least 21 miles *against* the gentle breezes which prevailed, as they must have done if they came from the south-east coast of England. Two specimens of the fly *Helophilus trivittatus* and one of *Sphærophoria* (named by my colleague Mr. P. H. Grimshaw) appeared at the same time, and many other species, including a Tortrix, a Plume moth, and a Hemipterous insect, which I have been unable to determine. On the morning of September 28th I took fine fresh specimens of *Ennomos alniaria* (male) and *Apamea testacea* at rest on the lee side of the deck house.



The chief interest of these notes, apart from the night movement of *V. cardui*, lies in the fact that they indicate almost unlimited possibilities in the way of an interchange of insects of various orders between the south-eastern shores of England and those of the Continent. Some of the fortuitous migrants named are of extreme delicacy, and that they should have been wafted so far across the waters of the North Sea was a matter of great surprise to me.

Many other insects came on board during my sojourn, and I wish it had been possible to pay more attention to them, but I was much otherwise engaged with the investigations which were the main object of my visit to the Lightship.

Museum of Science and Art, Edinburgh :  
November, 1903.

[It appears to us impossible to over-rate the importance of Mr. Eagle Clarke's notes, so far as the *nocturnal* migration of *V. cardui* is concerned. If our Entomologists would only take up the subject of migration in the business-like manner in which it is being investigated by our Ornithologists, many unexpected results would follow, and much that is now mysterious would be solved.—Eds.].

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#### XYLOPHASIA ZOLLIKOFERI AT MIDDLESBROUGH, YORKS.

BY T. ASHTON LOFTHOUSE, F.E.S.

Being from home on the afternoon of September 26th last, and it being fine and mild, I left instructions for "sugar" to be placed on a few posts and stems of trees in the garden at Linthorpe, Middlesbrough. When I arrived home in the evening I examined the sugar, and took a *Noctua* off which I could not make out from anything in my collection, or from any of the books at my disposal. After taking it off the setting board I sent it to my friend Mr. G. T. Porritt, who, after examining it and comparing with insects in his collection, was unable to determine it, but he suggested it might be *Xylophasia Zollikoferi*, and advised me to send it to Mr. Barrett for determination, and on doing so, Mr. Barrett kindly examined it, and he being uncertain as to its identity, took it to the South Kensington Museum and, in company with Sir Geo. Hampson, compared it with continental specimens in that collection, the result being that they pronounced it to be *Xylophasia Zollikoferi*, a species of which Mr. Barrett says "there is one certain previous British specimen in



Mr. Doubleday's Collection in Bethual Green Museum, and it is said one other!"

It is perhaps worthy of note that the insect was taken in the latter part of the week in which the invasion of *Vanessa cardui* occurred in this district and along other parts of the east coast, some specimens being seen in my garden.

The Croft, Linthorpe, Middlesbrough :  
November 11th, 1903.

## A NEW AUSTRALIAN GENUS OF *GELECHIADÆ*.

BY E. MEYRICK, B.A., F.Z.S.

I have completed for the printer a paper on the *Gelechiadæ* of Australia, but am anxious to give the following genus precedence over some thirty-six other new genera described therein; otherwise it is possible that by a slight extension of the limits of this genus a future writer might cause the whole of its numerous species to change their generic name. This is a result of the (as I think) unreasonable convention that, of genera or species described as new in the same paper, and really published at precisely the same moment, the first in order has priority of the second, and so on; whereas it would be more correct to agree that genera assumed as primary should take priority of their derivatives. Pending the adoption of this amendment, the present course is a practical precaution.

### PROTOLECHIA, *n. g.*

Antennæ  $\frac{3}{2}$ , in ♂ simple, basal joint without pecten. Labial palpi long, recurved, second joint more or less thickened with appressed scales, loose or somewhat rough beneath, terminal joint as long as second or shorter, acute. Fore-wings: 2 from angle of cell, usually connate or stalked with 3, seldom approximated only, 7 and 8 stalked, seldom 6 and 7 out of 8, 7 to costa. Hind-wings 1 or over 1, trapezoidal-ovate, apex obtuse or pointed, termen sometimes sinuate, cilia  $\frac{3}{5}$ — $\frac{4}{5}$ ; 3 and 4 connate, 5 rather approximated to 4, 6 and 7 nearly parallel or rarely approximated at base.

Type, *P. mesochra*, Low. I have 85 Australian species of this genus, but am not acquainted with it elsewhere; it is a more primitive form of the *Gelechia* group. The species are usually obscurely coloured, some having much the facies of a *Gelechia*, but others notably broader-winged.

Marlborough: November, 1903.

## SPANISH AND MOORISH MICRO-LEPIDOPTERA.

BY THE RT. HON. LORD WALSINGHAM, M.A., LL.D., F.R.S., &amp;c.

(Continued from page 268).

3331 : 1.—ALABONIA HERCULEELLA, *sp. n.*= *Harpella* \**staintoniella* (Z. ?), Stn., Ent. Mo. Mag., XVII, 247–8 (1881) <sup>1</sup>.

*Antennae* biserrate, biciliate ( $2\frac{1}{2}$ ), brownish fuscous. *Palpi* projecting more than four times the length of the head in front, median joint roughly clothed on both sides; dull ochreous above, fuscous beneath. *Head* fuscous above, pale ochreous at the sides. *Thorax* greyish fuscous; tegulae and a streak on either side pale ochreous. *Forewings* brownish ochreous to three-fifths from the base, with shining metallic steel-grey lines, one along the costa, abruptly diverted downward at the middle of the wing, a second above the fold obliquely diverted downward, at its apex becoming confluent above the dorsum with the apex of a third metallic streak arising at the base below the fold and following the fold to nearly half the wing-length; the space below this latter streak is shaded with brown and sprinkled with fuscous scales, as is also the lower edge of the middle streak; at three-fifths an oblique whitish ochreous costal streak of even width running obliquely inward terminates in a steel-grey metallic band, joining it to a smaller whitish ochreous triangular dorsal spot slightly anterior to it, the space between them and the apex and termen is brown freely sprinkled with narrow whitish ochreous scales; cilia brownish grey, with a few whitish ochreous scales along their base. *Exp. al.*, 14–17 mm. *Hindwings* rather shining brownish fuscous; cilia paler brownish fuscous. *Abdomen* brownish fuscous, tinged with ochreous on the second segment, and with some shining steel-grey across the third and fourth segments as well as at the sides. *Legs* rather shining ashy grey.

*Type*, ♂ (87651). Mus. Wlsm.

*Hab.*: MOROCCO—Tangier, 18.IV.—18.V.1902. Four specimens, all ♂♂. PORTUGAL—Picota, 1600—1700 ft, 20.V. (Eaton) <sup>1</sup>.

This species is quite distinct from *staintoniella*, Z., and *geoffroyella*, L., and the differences are referred to in Stainton's description of a single specimen taken in Portugal [Ent. Mo. Mag., XVII, 247–8 (1881)]. He fails to note, however, that the downward extension of the metallic costal streak almost reaches, and in three of my specimens quite touches, the metallic connection between the costal and dorsal spots. I have no specimen of either of the other two species in which this peculiarity occurs. The narrow and obliquely placed costal spot is also a good separating character, and the whole insect possesses a generally duller appearance than those of this genus already known.

2331 : 2.—ALABONIA CHAPMANI, *sp. n.*

*Antenna* biciliate ( $2\frac{1}{2}$ ), white, with black annulations. *Palpi* pale yellow above,

the long median joint dark umber-brown on the outer side and beneath, the terminal joint naked, slender, pale yellow. *Head* and *Thorax* pale yellow-ochreous. *Forewings* reddish brown, with pale yellow-ochreous markings, consisting of a streak along the costa from near the base, widening outward and dilated downward before the middle, forming an axe-shaped patch narrowly margined throughout except on costa with black scales; beneath it is a broader streak of the same colour extending from the middle of the base to the middle of the dorsum, obtusely angulated upward above the fold at about its middle and narrowly margined with black scales, except along its lower edge, where it leaves an elongate patch of the brown ground-colour along the dorsum; beyond these streaks is an inwardly oblique fascia of the same colour, much attenuated above the middle at about the end of the cell, but widening upward and downward to the costa and dorsum respectively, its inner edge narrowly margined with black scales; cilia reddish brown, fading to pale cinereous on their outer half. *Exp. al.*, 15 mm. *Hindwings* and cilia fuscous. *Abdomen* rust-brown towards the base, greyish fuscous posteriorly. *Legs* greyish fuscous, hind tarsi banded with pale ochreous.

*Type*, ♂ (71931). Mus. Wlsm.

*Hab.*: SPAIN—SALAMANCA—Bejar, VI-VII.1902 (*Chapman*).  
Two specimens.

This species, for which I am greatly indebted to Dr. Chapman, is abundantly distinct from any hitherto described.

### 3384: 1.—BORKHAUSENIA IAGATHELLA, *sp. n.*

*Antennæ* distinctly annulate with black and white, basal joint white tipped with black. *Palpi* black, a few white scales along the upper side of the median joint, the terminal joint with a broad white ring at its base, its apex also white. *Head* black above, front and sides white. *Thorax* yellow-ochreous, with fuscous shading anteriorly. *Forewings* yellow-ochreous, a fuscous shade extending along the costa from base to beyond middle, terminating at an inwardly oblique sinuous white line descending from the costa; this costal shade emits from its lower edge, at about one-sixth from the base, an outwardly oblique narrow blackish fascia attaining the dorsum at one-fourth, this is outwardly margined by a white line; before the tornus is a chestnut patch sprinkled around its edges with black scales and margined along its inner edge at its upper extremity by a slender white line, which almost touches the white margin of the costal shade above it; on the outer third of the wing there are no markings; cilia yellow-ochreous; underside fuscous, cilia yellow-ochreous. *Exp. al.*, 12—15 mm. *Hindwings* rather shining leaden grey; cilia pale brownish grey. *Abdomen* leaden grey, whitish beneath. *Legs* grey; hind tarsi blackish, with three or four white annulations.

*Type*, ♂ (87655). Mus. Wlsm.

*Hab.*: MOROCCO — Tangier, 12.IV.—18.V.1902; Tetuan, 27.V.1902. Eleven specimens.

This species is probably nearly allied to *mercedella*, Stgr., from Spain, but differs in the position of the markings, and of the white lines. The group to which it belongs is that represented by *pokornyii*, Nkrl., *borkhausenii*, Z., and *icterinella*, Mn.

(To be continued).

*CORIZUS HYALINUS*, FAB., AN ADDITION TO THE BRITISH  
*HEMIPTERA*.

BY EDWARD SAUNDERS, F.R.S., &c.

We are indebted to Mr. Alfred Beaumont for the addition of this very distinct species to our list, a single male specimen having been taken by him in a marshy place near Gosfield in Essex. *C. hyalinus* is one of the most easily recognised species of the genus, and Mulsant and Rey formed a distinct subgenus for its reception, under the name *Colobatus*. Stål went further and raised it to a distinct genus, which he named *Liorhyssus*, distinguishing it from the other allied species by the narrowly raised, impunctate, anterior margin of the pronotum. I have, however, followed Dr. Puton in retaining it under the more inclusive genus *Corizus*.

Specifically it can be at once distinguished from the other members of the genus by the long, very hyaline, membrane, the long apical joint of the antennæ, which is much longer than the third, by the form of the abdomen, which is slightly widened and rounded posteriorly, whereas in our other species it is more or less acuminate, and by the coloration of the back, which, as in the other species, can be seen through the transparent membrane. The pattern of this is pale on a black ground, and the apical segment has a central pale parallel-sided line running up from the apex, with a black vitta on each side of it, whereas in the other species the central portion is black, and a pale line runs up on each side from the apex, bordering it. The connexivum in Mr. Beaumont's specimen is marked with large black spots, and the two black vittæ on the terminal segment look as if they were connecting links to complete the continuity of the series.

I can find no record of the capture of this species from any locality so far north as England. Its normal distribution seems to be the Mediterranean region and the south of Europe.

St. Ann's, Woking :

*November 5th, 1903.*

*COCCIDÆ* IN GLOUCESTERSHIRE.

BY CHARLES J. WATKINS, F.E.S.

Owing to the valued aid of my friend Mr. Robert Newstead, A.L.S., I am able to give a List of some of the Scale Insects to be found in a district of the Cotteswolds, and within a radius of ten miles from the town of Painswick, including the well-wooded portions of Cranham, Great Witcombe and Birdlip, and at an elevation of from 200 to 800 feet above sea level; the hill tops and slopes being of Oolitic formation resting on the Liassic clays forming the bottom of the valleys.

Formerly the uplands timber was chiefly beech, of which fine examples may still be seen in the larger but diminishing woods. The new woods of the last half century being chiefly larch and fir, give a new character to the landscape of our hills, while many slopes and rich pastures of the lower lands exhibit portions timbered with elm, ash, chestnut, poplar, alder, willow, &c., with a sprinkling of the once famous oaks, and the varied bushes of the hedgerows and thickets. Mr. Newstead has kindly favoured me with a List of the Coccids found by him of late years in his brief, flying visits to the scenes of his early days—and almost the commencement of his natural history observations—on the Cotteswolds. To this List I have added those species observed or bred by myself in very limited time devoted to other groups of our insect fauna—hence a somewhat restricted List, but still showing several forms of economic importance, and indicating the probable presence of many other species to observers with the necessary time.

For students of our British Coccids the work of reference is Mr. Newstead's invaluable Monograph published by the Ray Society—a labour of love—to which I am deeply indebted for exhaustive information and guidance.

Specimens of all the species enumerated have been examined by Mr. Newstead; those bearing his initials are from his records. My own captures bear the initials C. J. W.

*Aspidiotus zonatus*, Frauenf., ♀ on oak, near Birdlip (R. N.); ♂ on oak, near Stroud (C. J. W.).

*Diaspis (Aulacaspis) rosæ*, Bouché, on wild rose stems, very local, Birdlip and Witcombe (R. N.).

*Chionaspis salicis*, Linn., ♂ ♀ on willow, ash and alder, common, Birdlip, &c. (R. N.); on alder, Painswick (C. J. W.).

*Mytilaspis pomorum*, Bouché, ♀ on apple and cotoneaster (R. N.); ♀ common on pear (C. J. W.), no ♂ puparia seen.

*Signoretia luzulæ*, L. Duf., very sparingly in the Witcombe and Cranham woods (R. N.).

*Lichtensia viburni*, Signoret, ♂ ♀ on ivy, Painswick, July 25th, 1900 (R. N.); very common on ivy near Stroud; bred all the sexes and parasitic Chalcidid (C. J. W.).

*Eriopeltis festuæ*, Fonsc., ♀ sacs on grass, 1900 (R. N.); ♀ sacs on grass near Painswick, 1884, &c., from which bred Dipterous, Hymenopterous and other parasites (C. J. W.).

*Lecanium capræ*, Linn., all stages common on hawthorn (R. N.); common on hawthorn, pear and plum, but scarce on cherry, at Painswick (C. J. W.).—*L. persicæ* var. *sarothamni*, Douglas (= *L. ribis*, Geof.), ♀ on cotoneaster and gooseberry (R. N.); on cotoneaster, a fine tree of which it nearly destroyed at Pitchcombe, near Stroud (C. J. W.).—*L. hesperidum*, Linn., ♀ on ferns under glass (R. N.); on elkhorn



fern, Stroud (C. J. W.).—*L. hesperidum*, var. *alienum*, Douglas, ♀ on leaves of a greenhouse rose, September, 1896 (C. J. W.).—*L. hemisphaericum*, Targioni-Tozzetti, ♀ on maidenhair fern in a sitting room, August, 1892 (C. J. W.).—*L. persicae*, Geoff., common at Witcombe (R. N.); ♀ on young shoots of a greenhouse rose, Stroud (C. J. W.).—*L. bituberculatum*, Targioni-Tozzetti, ♀ common on hawthorn near Gloucester, evidently a very local species (R. N.).

*Physokermes abietis*, Geoff., ♀ on spruce fir, and common in some localities, as Cheltenham, Witcombe, &c. (R. N.), Painswick (C. J. W.).

*Apterococcus fraxini*, Newstead, ♀ on ash bark, much less common in Gloucestershire than in the north-western districts of England (R. N.).

*Asterolecanium variolosum*, Ratz., sparingly on the Cotteswolds between Cheltenham and Cranham (R. N.); ♀ on dwarf oaks, Stockend, near Painswick (C. J. W.).

*Eriococcus insignis*, Newstead, ♀ on grass sparingly at Cranham (R. N.).

*Cryptococcus fagi*, Bärensprung, ♀ on beech, Forest of Dean, common, but scarce in Witcombe district (R. N.).

*Dactylopius citri*, Risso (= *D. destructor*, Comstock), common mealy bug, ♀ on various plants under glass (R. N., C. J. W.).—*D. longispinus*, Targioni-Tozzetti, on various plants under glass (R. N.).

*Pseudococcus aceris*, Signoret, sparingly on various shrubs, Gloucester district (R. N.).

*Orthezia cataphracta*, Shaw, not common near Cheltenham (R. N.).

*Newsteadia floccosa*, De Geer (= *Orthezia floccosa*), abundant on the dry Oolitic escarpments of the Cotteswolds between Cheltenham and Birdlip (R. N.).

Painswick: October, 1903.

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## WHAT IS THE NATIVE COUNTRY OF *ECTOPSOCUS BRIGGSI*, McLACH.?

BY ROBERT McLACHLAN, F.R.S., &c.

This pretty little Psocid, although described so recently as 1899, is obtaining an unlooked-for notoriety. It has been found in five or six localities in the south of England, amongst fallen leaves, and always in autumn and winter. This year Dr. Günther Enderlein, of Berlin, who is doing grand work in *Psocidæ*, has published a remarkable illustrated memoir on "Die Copeognathen (= *Psocidæ*) des indo-australischen Faunengebietes," and includes *E. Briggsi* (p. 294, pl. vii, fig. 47) on the authority of a specimen from Sydney, N. S. W., taken there in October, 1900, by the Hungarian collector Biró. On the strength of this he suggests that the species may have been brought to England from Australia. But it so happens that I have for some time possessed (but have not hitherto recorded) several examples from Salisbury, Mashonaland (South Central Africa), taken by Mr. G. A. K. Marshall in June, 1900, from whom I received them. *E. Briggsi* in England is decidedly a cold-loving species, and as Salisbury is

situated on a plateau of about 5000 ft. elevation, there is probably no very great difference between June there and November and December here. So I think it is too soon to fix the species as originating in Australia. According to present evidence both Australia and Africa may have received it from England.

I may remark that, according to the too brief description, *Psocus piger*, Hag., from Ceylon, is probably an *Ectopsocus*, but it can scarcely be specifically identical with ours.

Lewisham, London :

November 3rd, 1903.

# *VESPA RUFa + AUSTRICA.*

BY D. SHARP, M.A., M.B., F.R.S., &c.

Like many others I have been much interested in the paper by Mr. Carpenter and Mr. Pack-Beresford on *Vespa austriaca* and *V. rufa*. Mr. E. Saunders' comments on the subject in the November No. of this Magazine seem to me to point out clearly the way to an explanation of the relations of the two wasps. And if we add to the considerations he has adduced the additional one that *V. austriaca* is a *Vespa* that produces no workers, I think we need have but little difficulty in understanding the case.

We know that all the Social Insects have the remarkable peculiarity of producing two forms of the females—a worker form and a reproductive form—and in this fact lies the essential distinction between the social life and the solitary life. When there are but few workers produced the social life differs but little from the life of the solitary *Hymenoptera*. As an instance we may mention the ant *Ponera*.

There can be little doubt that the perfection of the social life has been very gradually and slowly brought about; and if so, there was a time when *Vespa rufa* and *V. austriaca* were pretty nearly, if not absolutely, one and the same, for *Vespa rufa* did not then produce the two forms of the female. If we suppose that during the period subsequent to this the common stock produced offspring some of which had the power of producing (to a slight extent) the differentiated females, then these would be *Vespa rufa* ethologically; while the descendants that had not this power would be *Vespa austriaca* ethologically.

This supposition does not deal with the morphological distinctions between the two forms. And the question as to the aetiology of these morphological distinctions brings us into contact with some of the most interesting biological problems. What is the relation between

ethology and morphology in a series of generations? Does a difference in habit extending through a series of generations involve (or induce, or become correlative with) a difference in structure?\*

There are some who will assert the contrary, and say that it is just as probable that a morphological differentiation precedes an ethological one. And no doubt the two differentiations in a series of generations re-act in such a way that each intensifies the other, as may be read in the first edition of Herbert Spencer's *Principles of Biology* in the chapter relative to Structure and Function.

There is thus not much difficulty in understanding that the morphological and ethological distinctions in the two wasps are correlative; and in fact only different aspects of a single differentiation.

But, it will be asked, how comes it that these differentiations have not been obliterated by crossing? One would suppose that the two forms when still very imperfectly differentiated would, if they lived together, interbreed and so obliterate the nascent distinctions.

This is evidently the view that has induced Mr. Saunders to speak of *austriaca* as an inquiline. Here I differ a little from him. An inquiline is a guest that is not really of the family.

I believe it will be found that ethological segregation is a highly important factor in morphological differentiation.

At the present time the difference in the offspring of the group of individuals having two kinds of females and the group having undifferentiated females is accompanied by a difference in habits (workers in one case, no workers in the other). And as "birds of a feather flock together" in the human colony, so I have no doubt they did in the primitive wasp colony. And the segregation thus induced would be sufficient to prevent complete interbreeding. It is probable that even at the present time there is occasional interbreeding, and I expect that observation will show that there is a good deal of social segregation in the nests.

To sum up. The old common stock from which both *V. rufa* and *austriaca* are derived has differentiated into two nearly, or quite, distinct forms which have never ceased to live together. They have been prevented from the results of thorough intercrossing by ethological segregation due to the differences in instinct and physiology, arising from the differences in their industrial and reproductive powers. Probably both have changed morphologically during the evolution, but the present *V. austriaca* is the more nearly representative of the original stock.

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\* A difference in colour is of course a difference in structure.

It is in this sort of way that I believe the differences can be conceived as developing in this very curious case.

Some of the French entomologists are of opinion that the parasitic bees are very polyphyletic, and have actually arisen from the bees they parasitise. And there is I think little doubt that this view will prove approximately correct.

Whether there is any value or not in the suggestions I here venture to put forward, it is quite clear that Mr. Carpenter and Mr. Pack-Beresford have discovered and appreciated a most interesting subject, and we all hope they will be able to go on with it.

Cambridge: November 3rd, 1903.

*Vespa austriaca*, Panzer, in North Durham.—This year two fine queens of this interesting wasp were taken by a young entomological friend of mine at Ebchester, on June 10th and 20th respectively; whilst a third specimen was taken by myself at Shotley Bridge on June 30th. Both places lie in the valley of the Derwent in the north of Durham, and are localities little more than a mile apart.—CHARLES ROBSON, Birtley, Co. Durham: November 11th, 1903.

*Vespa austriaca* and *V. rufa* in Scotland.—Spring queens of these two wasps—whose relationship forms the subject of the admirable paper by Messrs. Carpenter and Pack-Beresford, published in this Magazine for September and October of the present year—are, according to my experience, common in this (the Edinburgh) district of Scotland; but they do not appear simultaneously, nor as a rule in the same localities, *austriaca* being, curiously enough, the more lowland of the two. Nearly all the *austriaca* queens I have seen have occurred in June, flying about banks and roots of hedges, while the *rufa* spring-queens have mostly been taken in May, when the blaeberry or bilberry (*Vaccinium myrtillus*)—its favourite flower—is in bloom. Compared with other wasps—*vulgaris* (much the commonest), *germanica*, *sylvestris*, and *norvegica*, which all put in an appearance in April—*rufa* is a late species no doubt, but not so late as *austriaca*. My records show this clearly—they are as follows:

*Vespa austriaca* queens.

1900.  
June 4—Drumshoreland, one (Ent. Mo. Mag.,  
1900, p. 243).  
1901.  
May 28—one crawling on the floor of my bedroom, Morningside, Edinburgh.  
June 8—Blair-Adam, three.  
„ 22—Kinross, one.  
„ 25—Polton, three.  
July 4—Drumshoreland, one.  
1902.  
June 10—Aberdour, one.  
„ 28—St. David's, one.  
„ 30—Polton, five.  
July 2—Dalkeith, one.  
1903.  
June 10—Dalmeny Park, one.

*Vespa rufa* queens.

1899.  
May —Dunbar, one.  
June 1—Swanston Hill, at juniper bushes,  
several.  
1900.  
May 17—Newpark, at blaeberry flowers, several  
1901.  
May 11—Heriot, one.  
„ 13—Newpark, at blaeberry flowers, common  
„ 15—Bavelaw fir wood, „ „  
„ 21—Forest Mill „ „ „  
„ 22—Inveresk, one.  
June 8—Blair-Adam, one.  
„ 27—Bavelaw Moss, one.  
1902.  
May 10—Muckart, one.  
1903.  
Feb. 14—Kirknewtown, one hibernating under  
bark of dead fir.

I have no doubt *V. austriaca* is a fairly common insect in many other parts of Scotland. Besides the Scottish records mentioned in Messrs. Carpenter and Pack-Beresford's paper, there are Trail's for Dee (Trans. Nat. Hist. Soc. Aberdeen, 1878, p. 46), and Dale's for Skye (Ent. Mo. Mag., 1882, p. 257).

I may mention that I have found several underground nests of *V. sylvestris* in this district.—WILLIAM EVANS, 38, Morningside Park, Edinburgh: Oct. 14th, 1903.

*Nomada guttulata*, Schenck, at Gosfield, Essex.—A single ♂ example of this rarity was captured by me on May 23rd, 1903. This is, I believe, the third record of the capture of this species during the past season.—A. BEAUMONT, Gosfield: November 6th, 1903.

*Nomada guttulata*, Schenck, in South Devon.—For several seasons past my friend Mr. A. E. Holdaway, of Newton Abbot, has kindly sent me various insects taken by him in the above district. Among these was a *Nomada* captured on May 16th, 1901, an insect which I thought at the time must be *N. ochrostoma*, Kirby. When, however, I came to study the genus critically in the course of last winter I found that, in spite of a strong resemblance, the specimen differed from that species. I have recently sent it to Mr. Ed. Saunders, who identifies it as *N. guttulata*, Schenck, ♂, "a very large specimen, nearly twice the normal size." I am indebted to my friend Mr. Holdaway for the specimen, which thus adds a most interesting species of great rarity to the fauna of the county.—A. H. HAMM, 22, Southfield Road, Oxford: October, 1903.

*The Dalean Collection*.—I am glad to say that I have secured my father's collection of foreign insects, and my late brother's own collection of British, and that they are at Glanvilles Wootton. In addition to those already recorded in Ent. Mo. Mag., xxxix, p. 256, the following are in my brother's collection, all taken by himself. *Agrion pumilio*, Land's End, August, 1864; *Nothochrysa capitata*, 1864 and 1865; *Diplodoma marginepunctella*, G. Wootton, June 8th, 1865; *Aplota palpello*, G. Wootton, August 12th, 1869; *Xyela pusilla*, Bournemouth, May 1st, 1867; *Sciapteryx costalis*, Burning Cliff, April 25th, 1865.—C. W. DALE, Glanvilles Wootton: October 22nd, 1903.

*Symbiotes latus*, Redt., &c., at Gosfield, Essex.—On September 15th I took three *Symbiotes latus*, Redt., from a blown down elm, and I have to thank Mr. E. A. Newbery for determining the species. On the same day, when searching under bark of silver fir, a fine female *Sirex juveneus* crawled out, the first I have seen here. We have *S. gigas* in abundance.—A. BEAUMONT, The Cottage, Gosfield, Halstead, Essex: October 16th, 1903.

*Rare Hemiptera at Gosfield, Essex*.—Although the past season has not been favourable for collecting, I have met with the following species in my neighbourhood in addition to the *Corizus hyalinus* described above by Mr. Saunders. *Monanthia angustata*, H.-S., one specimen by sweeping, May 2nd, 1903; this I believe has only once occurred previously in Britain, viz., at Cisbury, near Worthing, where Mr.



Saunders captured a single specimen in 1888 (cf., Ent. Mo. Mag., xxv, p. 35). *Chilacis typhæ* and *Ischnorhynchus resedæ* in a marsh. *Hoplomachus Thunbergi*, Fall., July 2nd, 1903. *Oncotylus viridiflavus*, Goez, August 15th, 1903. *Macrotylus solitarius*, Mey., by sweeping, August 5th, 1903.—Id.: November 6th, 1903.

*Hypocoprus in East Sussex*.—When collecting at Camber, near Rye, in August of last year, I came across half a dozen specimens of a minute beetle which I did not recognise at the time, but which turned out to be the species standing in our Catalogues as *Hypocoprus lathridioides*, Motsch. Mr. E. A. Newbery, to whom I showed the insects, pointed out to me that, according to Reitter, our insect should be called *H. quadricollis*, Reitter, as distinct from *lathridioides*, Motsch., and this has since been confirmed by Mr. Champion. The beetles were taken, I believe, under a dead bird, but of this I cannot be quite certain, as, through not recognising at the time what a rarity I had found, I did not note with sufficient care the exact details of the capture.—E. A. BUTLER, 53, Tollington Park, N.: November 6th, 1903.

*Labia minor*, L., in October.—Apropos of Mr. R. McLachlan's note in the preceding number of the Ent. Mo. Mag., p. 285, on the appearance of *Labia minor*, L., at Lewisham during the last week in September, it may be of interest to record its still later occurrence at Grange-over-Sands, at the head of Morecambe Bay, where I met with it on October 9th, in a sheltered lane leading up from the little township to the lower slopes of Hampsfell. The morning was a very fine one, with sunshine of that hot and scorching character always associated with a wedge-shaped type of weather. Amongst *Coleoptera* occurring at the same time were *Telephorus rusticus* and *Rhagonycha testacea*, Malacoderms I have never before seen so late in the year, whilst a few days earlier *Clytus arietis* was captured on a rose.—E. J. B. SORP, Birkdale: November 5th, 1903.

*Ochsenheimeria Birdella* in a hay loft.—In the beginning of August (to be exact, on the 10th) I went up to my hay loft to see if there were any insects to be had at the window, for I had found by previous experience that numbers of insects came out of the hay to the light of the window. On this occasion there were with other insects numbers of a little moth, which attracted my attention as being something I had not seen before. I accordingly captured some specimens; I could have had dozens if I had wished. When I came to examine them I found that they were as I had at first supposed, total strangers to me, and not being well versed in Micros, I sent them to my kind friend Mr. Barrett, who informs me that they are *Ochsenheimeria Birdella*. As to the presence of these moths in the hay, I think it must be explained thus. The hay was cut between July 2nd and 11th; now Mr. Stainton (Manual, ii, 287) gives July as the month of emergence; but here we are a full month later, so that they would be either in the larva or pupa stage, probably the latter. About a month elapsed between the cutting of the first part of the field and its being carted in to be put into the loft, so that there would be time for the moths to be ready to emerge from their pupa cases, which evidently must be in or on the grass stems. Had they been emerging before we moved the hay I should have noticed them. The window at which I took them is just at the ladder by which entrance is given to the hay loft from the stable, consequently this window

is accessible, and being one that gets all the morning sunshine, is very attractive to insects that are in the hay.—W. F. JOHNSON, Acton Glebe, Poyntzpass: *October 16th*, 1903.

*Dark variety of Hydræcia micacea at Poyntzpass.*—On September 24th Mrs. Johnson had been down in Poyntzpass, and as she was returning was looking in the hedge for ferns, when she spied a fine moth sitting on a withered leaf. She had no box with her, so made a bag of the newspaper which she was bringing to me and put the moth into it as it sat on the leaf. At first I hoped it might be *H. petasitis*, but further examination made me doubtful, and on referring it to Mr. Barrett he confirms my doubts, but is kind enough to say it is even better, being so beautiful a variety. The moth is a female, measures fully  $1\frac{3}{4}$  inches in expanse of wings, and has an enormous body. The fore-wings are a silky purple-brown, with the central part almost black, and the hind-wings are very dark, a smoky-black, with the transverse stripe very indistinct. It will be seen from the brief description that I might be excused for my first idea that it was *petasitis*, and shows the justice of Mr. Barrett's remark with regard to *H. petasitis*:—"It should, however, be borne in mind that the darker northern form of *H. micacea* has sometimes been mistaken for it; indeed, Mr. E. Birchall's statement of its occurrence in Ireland, where it is not as yet known, seems to have been based on such an error" (Brit. Lep., vol. v, p. 73).—ID.

*Acidalia straminata, var. circumcellata, in Delamere Forest.*—I took a fine specimen of the above species in Delamere Forest, July 11th. I am much indebted to Mr. Barrett for kindly identifying this little Geometer.—J. ARKLE, Chester: *November*, 1903.

*Leucania Loreyi in South Devon.*—A specimen of this excessively rare British moth was captured by me at Torquay at sugar on September 27th, 1900. Mr. Chas. G. Barrett, to whom I have just sent this insect, has kindly examined and confirmed the above name.—ALFRED E. HOLDAWAY, Looe, Newton Abbot: *Oct. 26th*, 1903.

*Laphygma exigua and Campptogramma fluviata at Dovercourt.*—The morning of September 22nd was fine, warm, and hazy, when I visited a rough piece of salt-marsh near the coast to look for larvæ of *Hadena pisi* and *Cucullia asteris* on flowers of *Aster tripolium*, which was growing in masses along the dykes, and was in profuse bloom. *Pyrameis cardui*, which I had noticed in some numbers the previous day was now about in hundreds, and some of the flower heads were completely covered with them. *Plusia gamma* and *Stenopteryx hybridalis* were also abundant, and rose in numbers as I walked along. While stooping to pick off a larva of *asteris* I disturbed a small moth, which at first I thought was *Caradrina cubicularis*, but as its flight and general appearance did not quite satisfy me, I followed it up and caught it, and upon examining it found that I had captured a beautiful fresh-looking *L. exigua*. I had never seen the moth alive before, but knew it at once. Upon reaching home I slightly chloroformed it, and as it proved to be a male I killed and set it. The same evening I sugared on the coast in another direction. Very few moths came to

the sugar, but on one post there was a small moth which looked something like a female *Agrotis puta*, but while I was attempting to box it, it fluttered off into some long herbage where I was unable to find it. I then went on and visited other posts, and upon returning half an hour afterwards saw the same moth was again on the sugar. This time I placed my net under the post, and just as I did so the moth fell into it, and upon boxing it I was pleased to find I had secured another *exigua*. On my way home on passing a barbed wire fence I happened to throw the rays of my lamp on a pair of *Geometræ in cop.* sitting on the wires. These I boxed, and upon getting home found they were *C. fluviala*. This was unexpected good luck after such a wretched season; but more was in store for me, for on the 25th I took two more *exigua* at sugar, and think I saw two others. The one taken at sugar on the 22nd I thought was a female, and had kept her for eggs, and the two taken on the 25th I fancied were male and female. (The sexes are rather difficult to distinguish when alive). I placed all three moths in a large jam pot together with leaves of various plants, some small pieces of paper, and a bit of tow, and supplied them every night with syrup placed on a piece of sponge. No eggs were deposited until the night of October 1st, when I was delighted to see two or three small batches on the muslin cover, and from this date up to October 14th, when the last moth died, small batches appear to have been deposited every night upon the muslin or upon the pieces of paper, but none were laid upon any of the leaves. The eggs began to hatch on October 12th, and they all proved fertile. The young larvæ were supplied with various kinds of food, and now they seem to have settled down to groundsel and dock, showing rather a preference for the latter. They would not touch plantain upon which they are said to feed. They seem to be inclined to be gregarious in their habits at the present time, but are growing very slowly, and look as if they were preparing to hibernate. The female *fluviala* was also kept for ova, and the larvæ resulting therefrom have just spun up.—GERVASE F. MATHEW, Dovercourt, Essex: *November 7th*, 1903.

[On September 27th eight examples of *L. exigua* were taken by Mr. Fieldhouse in Yorkshire, and recorded in the "Naturalist," p. 424.—EDS.]

*Microdon mutabilis*, L., at Aberfoyle, Perthshire.—While collecting *Diptera* at Aberfoyle last July I took three specimens of this rare fly. They were taken on different dates (July 2nd, 7th, and 11th) on the hills lying between Aberfoyle and the Trossachs, at an elevation of about 600 feet, at the flowers of heath (*Erica cinerea*). They were the only specimens seen, and they occurred within quite a small area of ground; the first two on almost the same spot. My attention was attracted by their peculiar flight, which was more like that of a beetle than a fly; they also kept low down, and only flew short distances at a time. The spot where I took them was swampy, due in a measure perhaps to the wet season, though I gather from Mr. Verrall's *Syrphidæ*, p. 661, that they are found in such places. The species has not, I think, been recorded from Scotland before. Mr. Grimshaw, of the Edinburgh Museum, from whom I have received much kind help, named the species for me, and he has included it in his "*Diptera Scotica*, III, the Forth District," in *Ann. Scot. Nat. His.* for October, p. 218.—A. E. J. CARTER, 4, West Holmes Gardens, Musselburgh, N.B.: *November 3rd*, 1903.

## Obituary.

*The Very Rev. Canon Bernard Smith*, of Great Marlow, passed away at the end of October, aged 89. More than 40 years ago he was known as one of the most ardent collectors of British *Lepidoptera*, and he was certainly one of the pioneers in breeding British "Maeros" from the egg. His success was very great, especially in certain *Notodontidæ*, &c., of which most of the specimens in collections came from him. He was a frequent contributor of notes to the "Intelligencer," and occasionally his name appeared in the early volumes of this Magazine. Readers of Buckler's "Larvæ" will realize the part he took in the production of the masterly figures in that work. Latterly he had made but small signs of entomological activity, and one of our colleagues who visited him about 1884 says he was then feeble, but still occupied in rearing his favourites, the children of his Church largely aiding him by active search for the larvæ. In ecclesiastical circles he was perhaps better known than in entomological. He was "the Bernard Smith of Magdalen," whose name so often appeared in connection with the earlier period of the so-called "Oxford Movement." In 1841, when Rector of Leadenham (Lincoln) he resigned his Fellowship of Magdalen College, and went over to the Roman Catholic Church with many other notabilities of the Established Church. But this is written *en passant*. He became Priest of the Roman Catholic Church at Great Marlow more than half a century ago.

## Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The Exhibitional Meeting was held in the Royal Institution, Liverpool, on Monday, October 19th, Mr. WM. WEBSTER, M.R.S.A.I. (St. Helens) in the Chair.

Mrs. F. Eveline Lister, of Bootle, and Mrs. Winifred M. Sopp, of Birkdale, were elected Members of the Society.

Certain amendments and additions to the rules of the Society were discussed and adopted. The following, amongst other interesting exhibits, were examined by the large gathering of Members present:—*Aplecta nebulosa*, var. *Robsoni*, from Delamere, by Messrs. R. Tait, Junr. (Manchester), B. H. Crabtree, F.E.S. (Levenshulme), C. F. Johnson (Stockport), and J. Collins (Warrington). Mr. Tait further exhibited *Agrotis ripæ*, *A. Ashworthii*, *A. valligera*, *A. agathina*, *Plusia festuæ*, *Zygæna Minos*, *Heliothis marginata*, and some remarkably large dark forms of *Acidalia contiguararia* from North Wales, as well as living specimens of *Agrotis Ashworthii*, *Aplecta occulta*, and *Acidalia contiguararia*. Mr. Crabtree's fine series of *Lepidoptera*, bred during 1903, included *Epunda lichenea* and *Eupithecia pulchellata*, from N. Wales; *E. venosata*, var. *hebridium*, from Shetland pupæ; *Tæniocampa opima*, from Wallasey ova; and *Odontopera bidentata*, ab. *nigra*, and vars. of *Abraxas grossulariata*, from wild Manchester larvæ. Mr. Johnson's valuable collection included an exceptionally fine var. of *A. grossulariata*, the ground colour of which, instead of being white, is a dark leaden colour. This insect was bred from a Warrington larva. Mr. Joseph Collins showed series of *Cucullia chamomillæ* and *Hydræcia petasitis*, bred from wild Warrington larvæ;



*Macaria liturata*, including a fair number of the var. *nigrofulvata*, and a collection of *Crambidae*, embracing most of the local Lancashire and Cheshire species. Mr. F. N. Pierce, F.E.S. (Liverpool) brought a specimen of *Sphinx convolvuli*, captured by Mr. G. Caunt at Wallasey in August last; and Mr. A. Tippins (Liverpool) exhibited *Abraxas grossulariata*, including one magnificent specimen with bright yellow ground colour, bred from a Dingle larva. Mr. H. B. Prince's (Birkenhead) extensive exhibit included a fine series of *Nemeophila plantaginis*, var. *hospita*, from the Lake District; and Mr. A. G. Wallington (Warrington) showed *Mamestra abjecta* from Warrington, a species of great rarity in the district. A collection of some 400 species of *Coleoptera* from the immediate neighbourhood of Southport was shown by Dr. G. W. Chaster, M.R.C.S. (Southport), and Mr. E. J. B. Sopp, F.R. Met. S., F.E.S. (Birkdale), which included, amongst its many rarities, *Thinobius brevipennis*; the very rare *Anisotoma picea*, *A. rugosa*, and *A. furva*; *Heterocerus fuscus*, hitherto recorded from the Isle of Wight only; *Heptaulacus villosus*; *Anmæcius brevis*, an insect entirely confined to the Southport district; *Ægialia rufa*; the very rare *Anthicus bimaculatus*, and *Gymnetron collinus*, &c. Mr. Fred. Birch (Wavertree) exhibited living specimens of *Chrysomela cerealis* in all its stages, and gave some interesting details of its life-history. Mr. H. B. Prince, a living specimen of *Phyllodromia germanica* from Birkenhead, which is considerably darker than the type, Mr. Sopp remarking that he had also lately received for identification the same species from the Borough Hospital there. Mr. Oulton Harrison (Wavertree) showed the *Coccus* (? sp.), commercially known as the "Rosy Black;" and Mr. W. H. Jennings (Hoylake), samples of liquorice root and coriander seed, exhibiting the enormous damage wrought by *Anobium paniceum*.—E. J. B. SOPP and F. BIRCH, *Hon. Secs.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, September 24th, 1903.—Mr. E. STEP, F.L.S., President, in the Chair.

Mr. South exhibited (1) a short series of *Aplecta nebulosa*, bred from Delamere Forest larvæ; all were darker than the typical form, but only two were var. *Robsoni*; (2) bred series of *Cabera pusaria* from Oxshott, Wisley, and Epping larvæ; many of the bred imagines resembled var. *rotundaria* in marking, but not in the shape of their wings. Mr. Goulton, bred series of *Orygia antiqua* and *Emmelesia unifasciata*. Mr. F. B. Carr, (1) a bred series of *Malacosoma neustria* from New Forest ova: all were brown in colour, half the ♂s pale and half the same shade as the ♀s; (2) a larva of *Cleora glabraria*, taken in the New Forest at Easter, and still feeding. Mr. Boxer, a collection of butterflies and moths from Durban. Mr. West (Greenwich), short series of three species of *Hemiptera*, taken from broom at Oxshott in September; *Livilla ulicis*, *Dictyonota strichnocera*, and the rare *D. fuliginosa*. Mr. Lucas read the Report of the Horsley Field Meeting, held on June 6th, and illustrated his remarks with lantern slides.

October 8th.—The President in the Chair.

Mr. F. A. Oldaker exhibited a series of *Apatura Iris* bred, from New Forest larvæ; a series of *Eutricha quercifolia* bred, from Leatherhead; a series of *Plusia moneta* bred, from Tilgate Forest; specimens of *Lophopteryx carmelita* and *Agrotis cinerea* from lamps at Dorking, and a specimen of *Sesia myopæformis* from Dorking.



Mr. Bishop, a bred series of *Plusia moneta* from Chinnor, and read full notes on their life-history, with especial reference to the colouring of the cocoons. Mr. South, (1) a series of *Aglaia (Vanessa) urticae*, which he had fed upon hop. There seemed to be no aberrational result, and the variation consisted in a reduction of yellowish spaces on the costa. (2) Several specimens of *Cleora glabraria*, bred from New Forest larvæ. One example was very considerably suffused and clouded with blackish. (3) A series of *Acidalia trigeminata*, bred from Wisley larvæ, a few fed up in 1902 and emerged in September, the majority hibernated, but only two pupated, and they emerged in June, 1903. Mr. Tonge, series of *Conchylis dipoltella* from Brighton, *Crambus alpinellus* from Arundel, five examples of *Senta ulvæ* from near Lowestoft, one *Leucania straminea* bred from a larva found near Lowestoft on sedge, and a specimen of *L. obsoleta* from the same place. Mr. Goulton, photographs of the larvæ of *Odontopera bidentata*, *Jochewra alni*, *Hemaris fuciformis*, *Halias prasina*, and *Phorodesma smaragdaria*. Mr. West (Greenwich), a series of the local Hemipteron, *Aradus depressus*, from Darenth under bark. Mr. Carr, living specimens of *Acanthosoma tristriatum* beaten from juniper at Salisbury.—HY. J. TURNER, Hon. Sec.

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ENTOMOLOGICAL SOCIETY OF LONDON: October 7th, 1903. Professor E. B. POULTON, M.A., D.Sc., F.R.S., President, in the Chair.

Mr. F. M. Littler, Althome, High Street, Launceston, Tasmania; Dr. H. Swale, M.B., Arawa House, Rotorua, New Zealand; Col. Jesse Griggs Pilcher, I.M.S., F.R.C.S., 133, Gloucester Road, Kensington, S.W.; Mr. S. A. Neave, B.A., Magdalen College, Oxford; and Mr. C. A. Wiggins, Kisumu, Lake Victoria Nyanza, British East African Protectorate; were elected Fellows of the Society.

Mr. G. C. Champion exhibited on behalf of Professor Beare some specimens of a *Niptus* new to the British list, captured in a granary at Strood on May 11th, 1901. Mr. C. O. Waterhouse, on behalf of Mr. Charles Pool, specimens of the same species, an insect closely resembling *N. crenatus*, but with distinct shoulders, and more parallel elytra which are less strongly striated. They were found in large numbers in a cornhandler's at Edmonton. Mr. H. St. J. Donisthorpe, specimens of *Aphanisticus emarginatus* from Parkhurst Forest, where it occurred plentifully this year, a beetle new to the British list, and a *Scymnus* new to science from Yarmouth, Isle of Wight. Mr. M. Burr, a living adult male earwig, *Labidura riparia*, Pall., captured near Boscombe at the end of August, 1903. He said that the very noticeable pale coloration becomes darker after death, sometimes nearly black, which might account for some of the numerous "colour-varieties." Dr. Norman Joy, a specimen of *Argynnis Selene*, taken last year in Berkshire, showing a remarkable tendency to melanism; also rare *Coleoptera*, taken in the same county during 1903. Sir George Hampson, a collection of Norwegian butterflies made by him on the Dovrefjeld, on the Altenfjord, at Bossekop, and other localities this year, including fine series of *Colias Hecla*, Lef., *Chrysophanus Hippothöe*, var. *Stieberi*, Gerh., *Eneis Norna*, Thnb., *Melitæa* var. *norvegica*, Auriv., the Norwegian form of *M. aurelia*, *Argynnis Freija*, and *A. Frigga*, a Labrador, arctic, and North American species, now found further south at KongsvoId for the first time. Mr. A. H. Jones, examples of *Erebia Christi*, taken this summer in the Laquinthal, and of the species to which

it is allied; *Satyrus actæa*, var. *cordula*, captured last July at Sierre, having four equal-sized pupilled eyes on the fore-wings, probably a local form peculiar to this warm locality; a short series of *Chrysophanus dorilis* (type) and *C. var. subalpina* from the Laquinthal, with *P. Hippothoe*, var. *Eurybia*, showing the strong resemblance on the upper surface, which the ♀ of this latter species bears to the ♀ *subalpina*. Mr. A. J. Chitty, specimens of a *Proctotrupid* which he said approached *Ponera constricta*, Latr., in appearance, and might be an *Isobrachium*, Först. If so, it was new to the British list. Mr. H. Willoughby Ellis, *Crioccephalus polonicus*, Motsch., a Longicorn beetle new to Great Britain, and also specimens of all stages from the egg to the imago, to illustrate the life-history of the species which he explained. The insects were taken in Scotch fir-trees this year in the New Forest. Also specimens of *Asemum striatum*, L., with larva and pupa, accounted heretofore rare in the New Forest, but this year occurring in abundance. Mr. Ambrose Quail, cases showing the life-history of some Australian *Hepialidæ*. Mr. Roland Trimen, F.R.S., some cases of mimicry between butterflies inhabiting the Kavirondo-Nandi district of the Uganda British Protectorate, particularly that in which *Planema Poggei*, Dewitz, is imitated by an apparent variety of *Pseudacraea Künowii*, Dewitz, and also by a hitherto undescribed form of the polymorphic ♀ *Papilio Merope*, Cram. This he said makes the fourth pronounced known form of the ♀ *Papilio Merope*. The usual and generally distributed form of this sex throughout Tropical Africa is that named *Hippocoön*, by Fabricius—an excellent mimic of *Amauris niavius*, L.; all the other forms appear to be very rare, and two of them—*Dionysos*, Doubl., and the form from Zanzibar described in the Presidential Address to the Society on January 19th, 1898—are not direct mimics of any other butterflies, but are least divergent from the non-mimetic coloration and pattern of the male. The form now brought to notice is, on the contrary, a direct and unmistakable mimic of *Planema Poggei*; and, as it is inconvenient to refer to the mimetic forms without assigning names to them, Mr. Trimen proposed to style this form *planemoïdes*. The President congratulated Mr. Trimen on the exhibit, and the special interest attaching to an interpretation of this remarkable form of the female *Merope*. At the same time he pointed out that the interpretation so convincingly illustrated that evening had been made out last spring by Mr. S. A. Neave, who exhibited this form of the female *Merope* together with *Planema Poggei* as its model at both soirées of the Royal Society in May and June, a time when Mr. Trimen's absence from England unfortunately prevented him from seeing them. Dr. T. A. Chapman, *Cænonympha Edipus*, *Satyrus Dryas*, and *Heteropterus Morpheus*, taken last summer near Biarritz; and *Erebia evias* and *Erebia stygna*, from the Logroño Sierra, Spain. These, respectively, he suggested were probable examples of homœochromatism. Little attention has been directed to homœochromatism in European butterflies, and these were certainly not examples of the detailed mimetism we are now familiar with in Müllerian groups from the African and neotropical regions. Also living imagines of *Crinopteryx familiella*. These had just emerged at Reigate, where they and their parents, descended from pupæ brought from Cannes in March, 1901, had lived out of doors during their active existence, being brought into the house only during their pupal aestivation. This seemed noteworthy in so southern (Mediterranean) a species. The experiment seemed quite likely to continue successful for the next generation.

Mr. Ambrose Quail read papers "On the antennæ of the *Hepialidæ*," and "On *Epalxiphora arenana*," Meyr. Mr. Gilbert J. Arrow read a paper "On the Laparostict Lamellicorn *Coleoptera* of Grenada and St. Vincent, West Indies." Mr. Thomas Harold Taylor, M.A., communicated "Notes on the Habits of *Chironomus (Orthocladius) sordidellus*." Mr. F. Du Cane Godman, D.C.L., F.R.S., communicated "Descriptions of some new species of American *Erycinidæ*." Mr. W. L. Distant communicated "Additions to the Rhynchotal Fauna of Central America." Dr. D. Sharp, M.A., F.R.S., read a paper "On the Egg-cases and Early Stages of some *Cassididæ*."

October 21st.—The President in the Chair.

Mr. Montague Austin Phillips, F.R.G.S., F.Z.S., of 22, Petherton Road, Canonbury, N., was elected a Fellow of the Society.

Mr. J. H. Keys sent for exhibition a black variety of *Carabus nemoralis*, Müll., from Dartmoor, recently recorded by him in the Ent. Mo. Mag. Mr. G. C. Champion exhibited a series of *Rosalia alpina*, Linn., found by himself on old beech trees at Moncayo, North Spain, in July last. Mr. A. J. Chitty, the larva of *Dytiscus flarescens*, taken at Eastling, Kent. Col. J. W. Yerbury, *Gastrophilus nasalis*, Linn., taken at Torcross, Devonshire, from the 19th to the 31st of August last. He said that as this rare species differs in a marked degree in its mode of flight, &c., from the common Horse Bot-fly, *Gastrophilus equi*, it would be as well to draw attention to these differences. *Gastrophilus equi*, when flying round a horse, visits as a rule the belly and the fore-legs. The ♀ carries her ovipositor almost horizontal, and she looks when on the wing like the lower two-thirds of the letter Z (Z). *G. nasalis* on the other hand, carries the ovipositor tucked under the belly and almost parallel to the axis of the body; this gives her when on the wing a peculiar ball-like appearance; *G. nasalis*, too, always flies to the horse's head. As a rule, the horse paid no attention to *G. equi*, but *G. nasalis* caused it great alarm. The eggs of *G. equi* were in hundreds on the shoulders and fore-legs of this cart-horse, but although the face and nostrils were searched carefully, neither eggs nor larvæ were found thereon. Also *Chersodromia hirta*, Walk., found commonly on the shore near Prawle Point; some were obtained by sweeping over seaweed, while others were running about over the sand. Also *Pamponerus germanicus*, Linn., from Barmouth and Porthcawl, taken in June. This insect appears to frequent the marram grass on the sand hills, and a ♀ taken at Barmouth on June 27th was preying on a beetle. Mr. A. H. Jones, Mr. H. Rowland-Brown, Dr. T. A. Chapman, and Mr. R. W. Lloyd, specimens of the genus *Melitæa* from various European localities, and a discussion on the probable affinities of the several so-called species took place. The President, some forms of *M. aurinia* taken by Mr. A. H. Hanim at Basingstoke and elsewhere, and *M. athalia*, *M. didyma*, and *M. Phæbe*, from Asia Minor and Persia. Dr. Chapman, an album containing photographs of the various stages of the embryo in the egg of *Psammotis hyalinialis*.

The President read, and commented upon, a paper received by him on "Protective Coloration in its relation to Mimicry, Common Warning Colour, and Sexual Selection," by Mr. Abbot H. Thayer.—H. ROWLAND-BROWN, *Hon. Sec.*

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„ ii— „ „ 87.

Plate iii—See page 132.

„ iv— „ pages 241, 242.

## E R R A T A.

Page 14, line 2 from bottom, for “*Heptagenia venosa*” and “*Ecdyurus sulphurea*,”  
read “*Ecdyurus venosus*” and “*Heptagenia sulphurea*.”

„ 39, „ 6 from top, for “18 ♀ s,” read “18 ♂ s.”

„ 59, „ 13 „ bottom, for “lip,” „ “tip.”

„ 61, second footnote, for “*Dorotheanus*,” read “*Dorotkanus*.”

„ „ lines 6 and 7 from bottom, for “would all doubtless have also occurred later  
in the year,” read “would all doubtless have occurred more plentifully  
later in the year.”

„ 62, line 7 from bottom, for “*Ctenistes* sp.?” read “*Ctenistes palpalis*,” Reichenb.”

„ 63, „ 14 „ top, „ “Gink,” read “Giuk.”

„ „ „ 14 „ bottom, „ “more abundant,” read “not abundant.”

„ 67, „ 2 „ top, delete “and” between “8.15” and “was.”

„ „ „ 25 „ „ insert “reported” between “further” and “captures.”

„ 175 „ 3 „ „ for “discernable,” read “discernible.”

„ 201, „ 5 „ „ „ “we,” read “he.”

„ „ „ 17 „ „ „ “1875,” „ “1873.”

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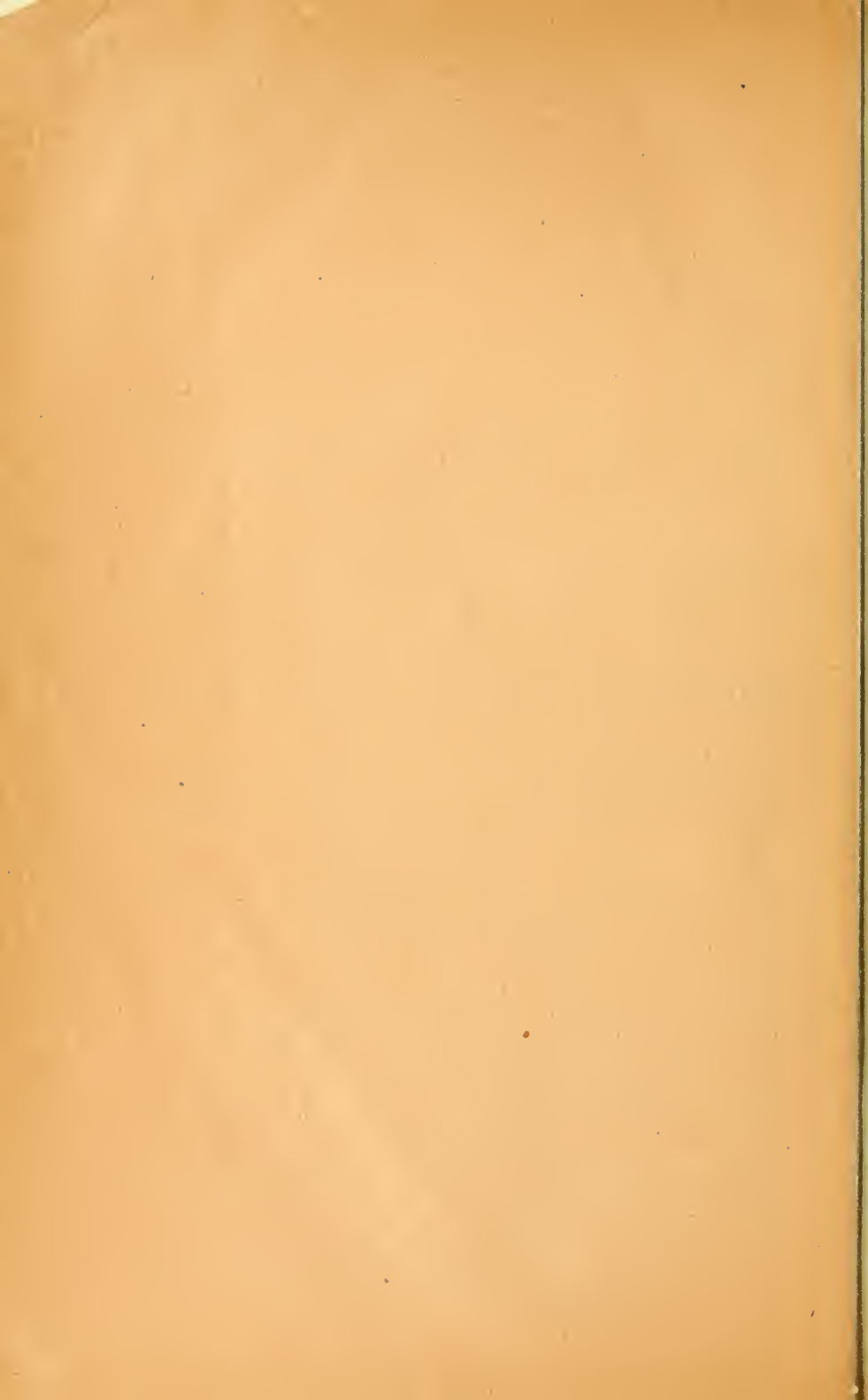
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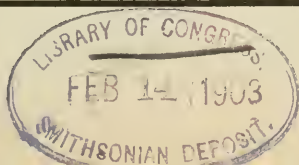
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## ERRATA.

Page 14, line 2 from bottom, for "*Heptagenia venosa*" and "*Ecdyurus sulphurea*," read "*Ecdyurus venosus*" and "*Heptagenia sulphurea*."

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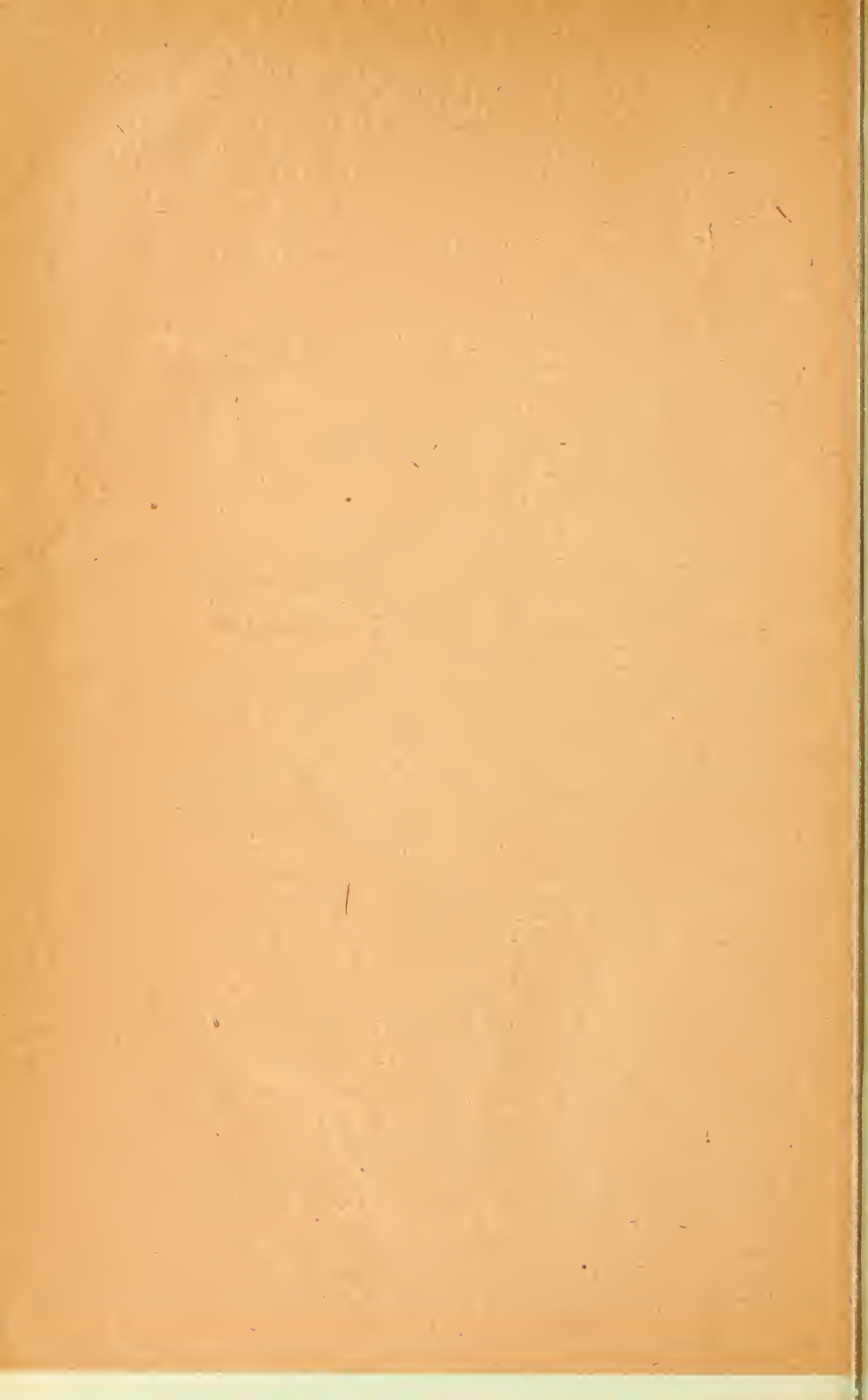
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# ENTOMOLOGICAL SOCIETY OF LONDON, WEDNESDAY,

MARCH 4TH, 1903, at 8 p.m.—*Papers to be read:*

1. "The Aculeate Hymenoptera of Barrackpore, Bengal:" by G. A. James Rothney, F.E.S.
2. "Notes on the Nests of Bees of the Genus 'Trigona':" by Charles Owen Waterhouse, F.E.S.
3. "On the Aganiidae in the British Museum, with descriptions of some new species:" by Colonel Charles Swinhoe, M.A., F.L.S., F.Z.S.

ENTOMOLOGICAL SOCIETY OF LONDON.—Meetings for the Session 1903–1904:—

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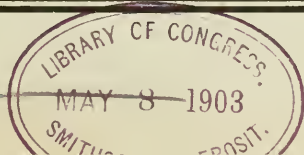
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- Page 59, line 13 from bottom, for "lip," read "tip."  
 „ 61, second footnote, for "Dorotheanus," read "Dorothkanus."  
 „ 61, lines 6 and 7 from bottom, for "would all doubtless have also occurred later in the year," read "would all doubtless have occurred more plentifully later in the year."  
 „ 62, line 7 from bottom, for "Ctenistes sp.?" read "Ctenistes palpalis, Reichenb."  
 „ 63, line 14 from top, for "Gink," read "Giuk."  
 „ 63, line 14 from bottom, for "more abundant," read "not abundant."  
 „ 67, line 2 from top, delete "and" between "8.15" and "was."  
 „ 67, line 25 from top, insert "reported" between "further" and "captures."

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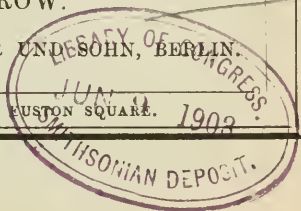
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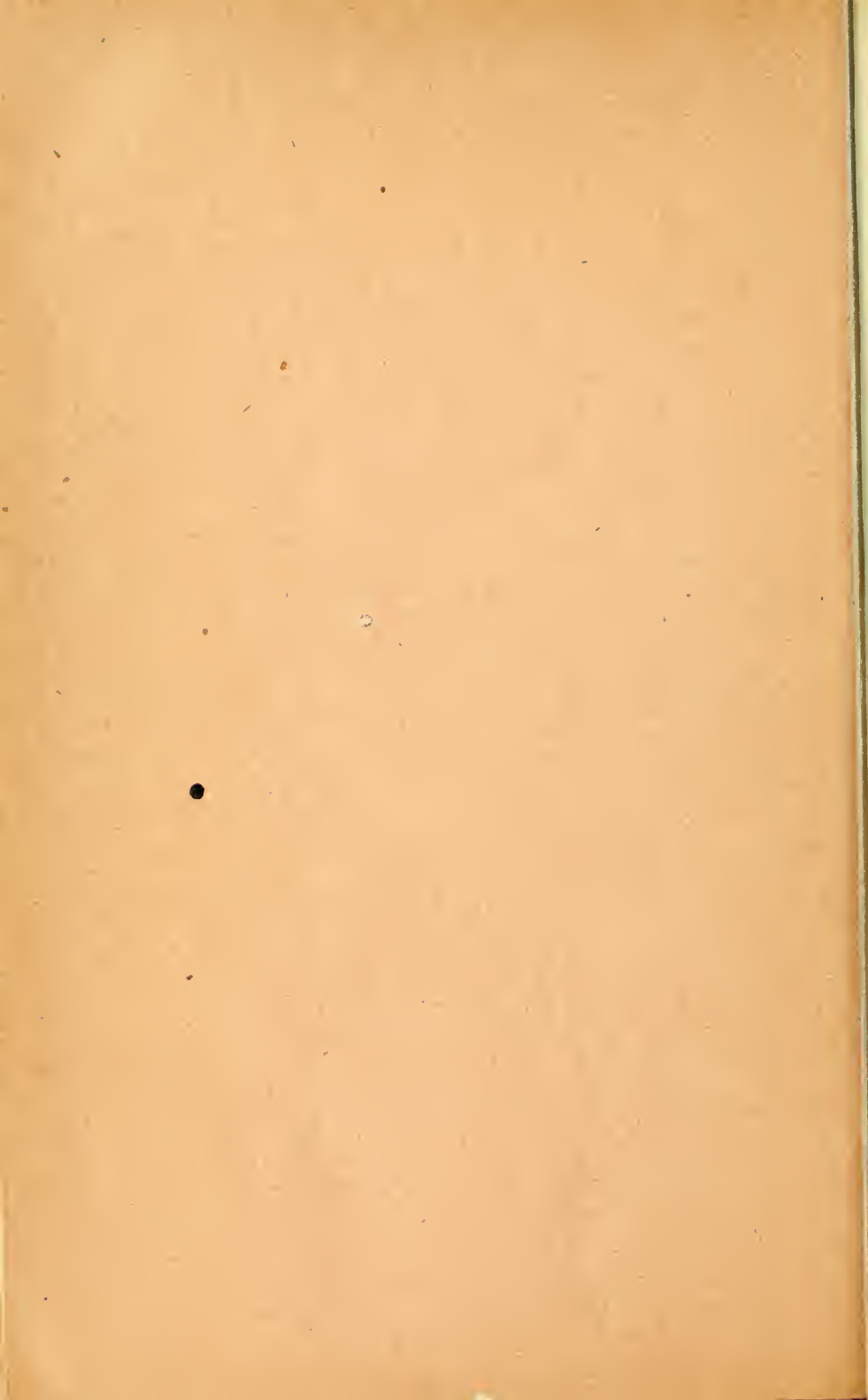
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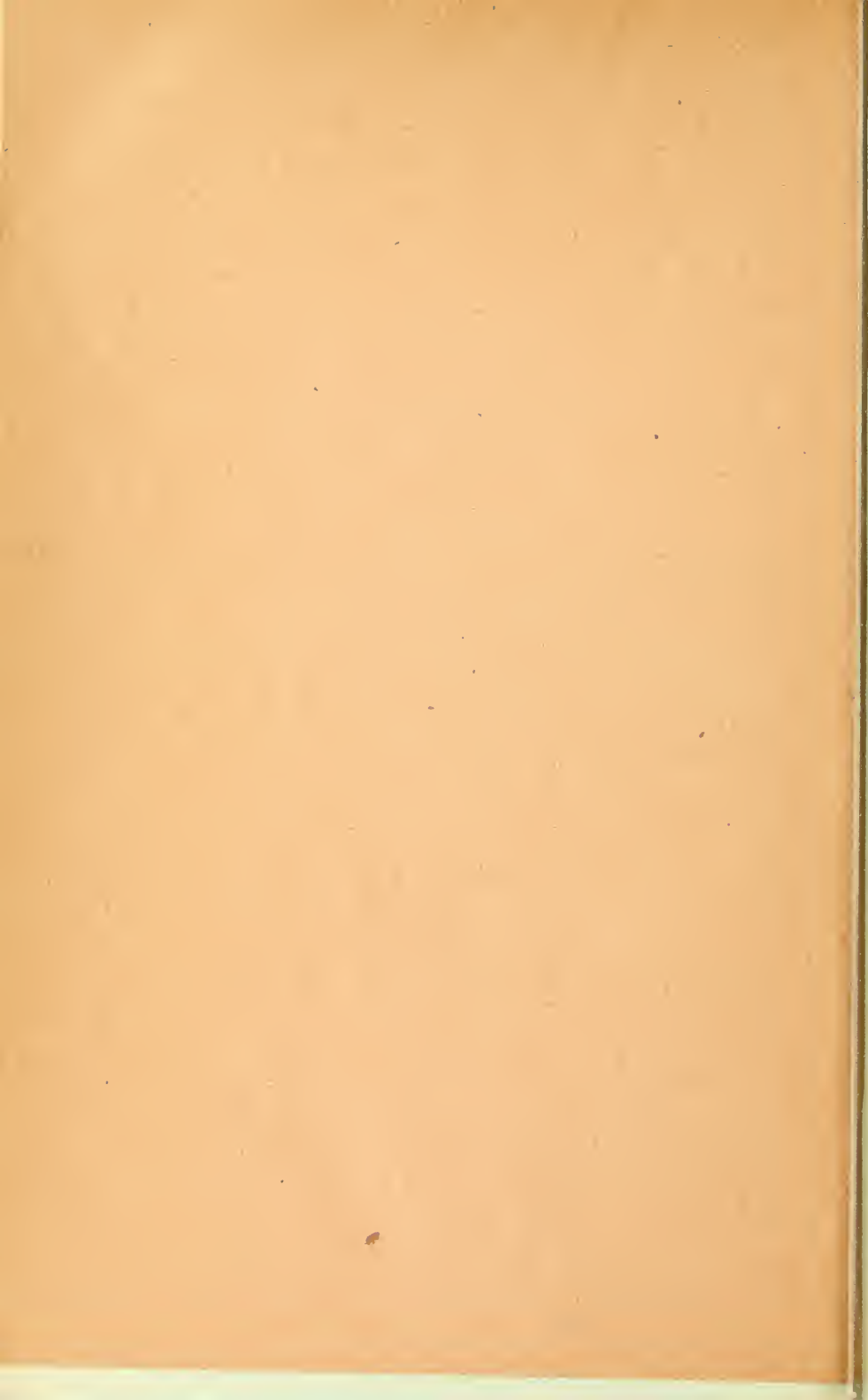
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SECOND SERIES—VOL. XIV.

[VOL. XXXIX.]

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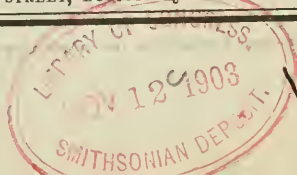
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DECEMBER, 1903.

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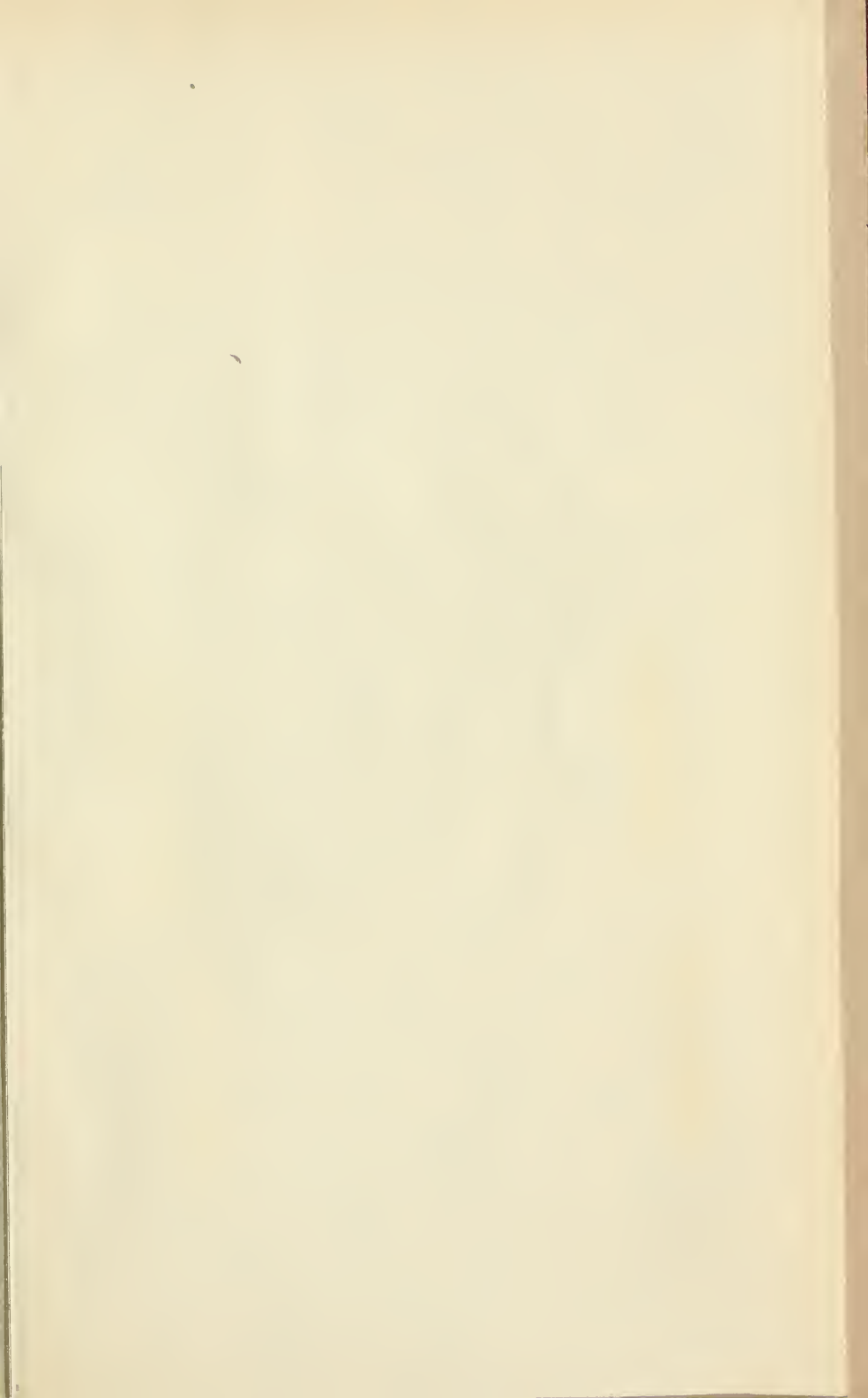
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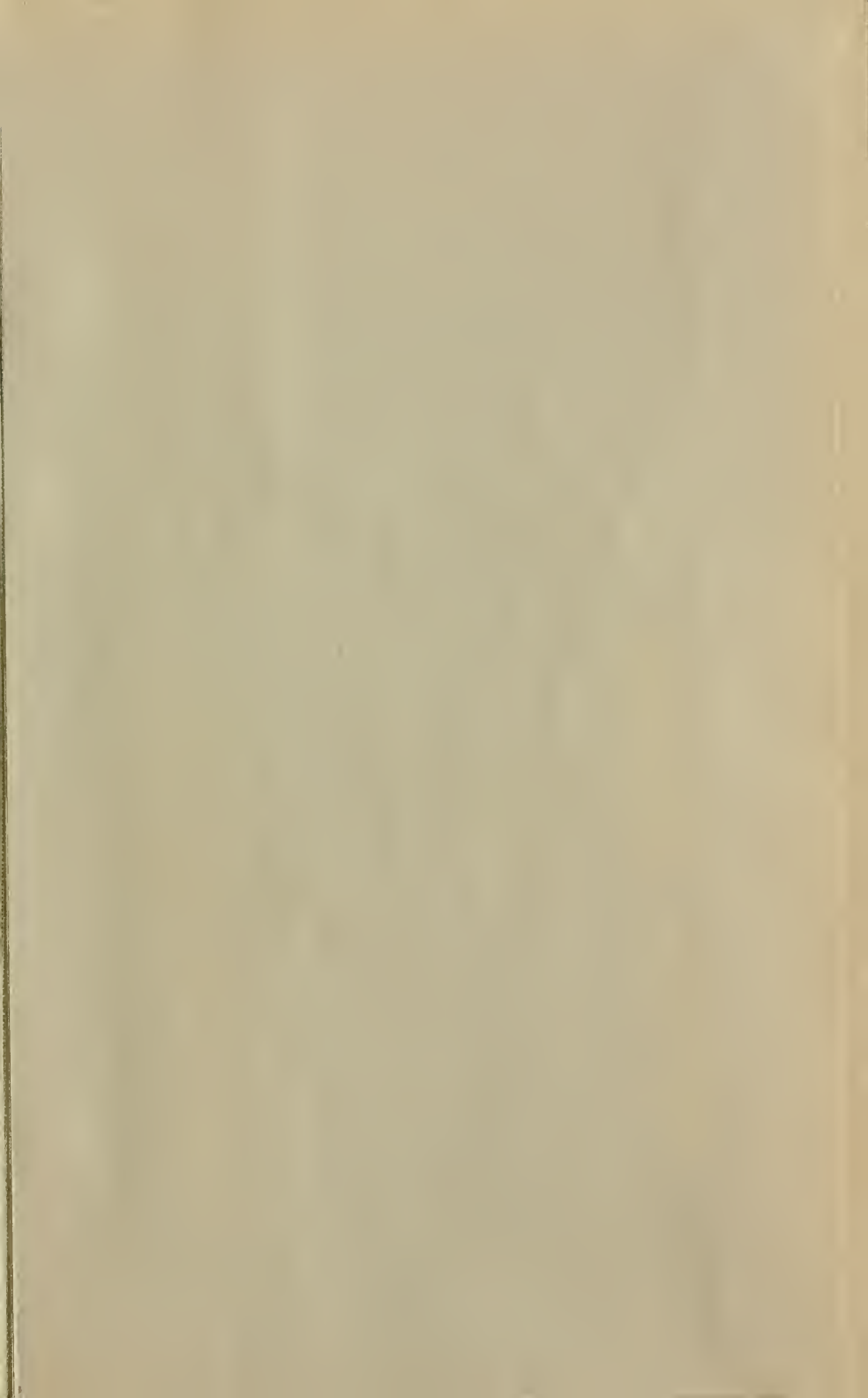
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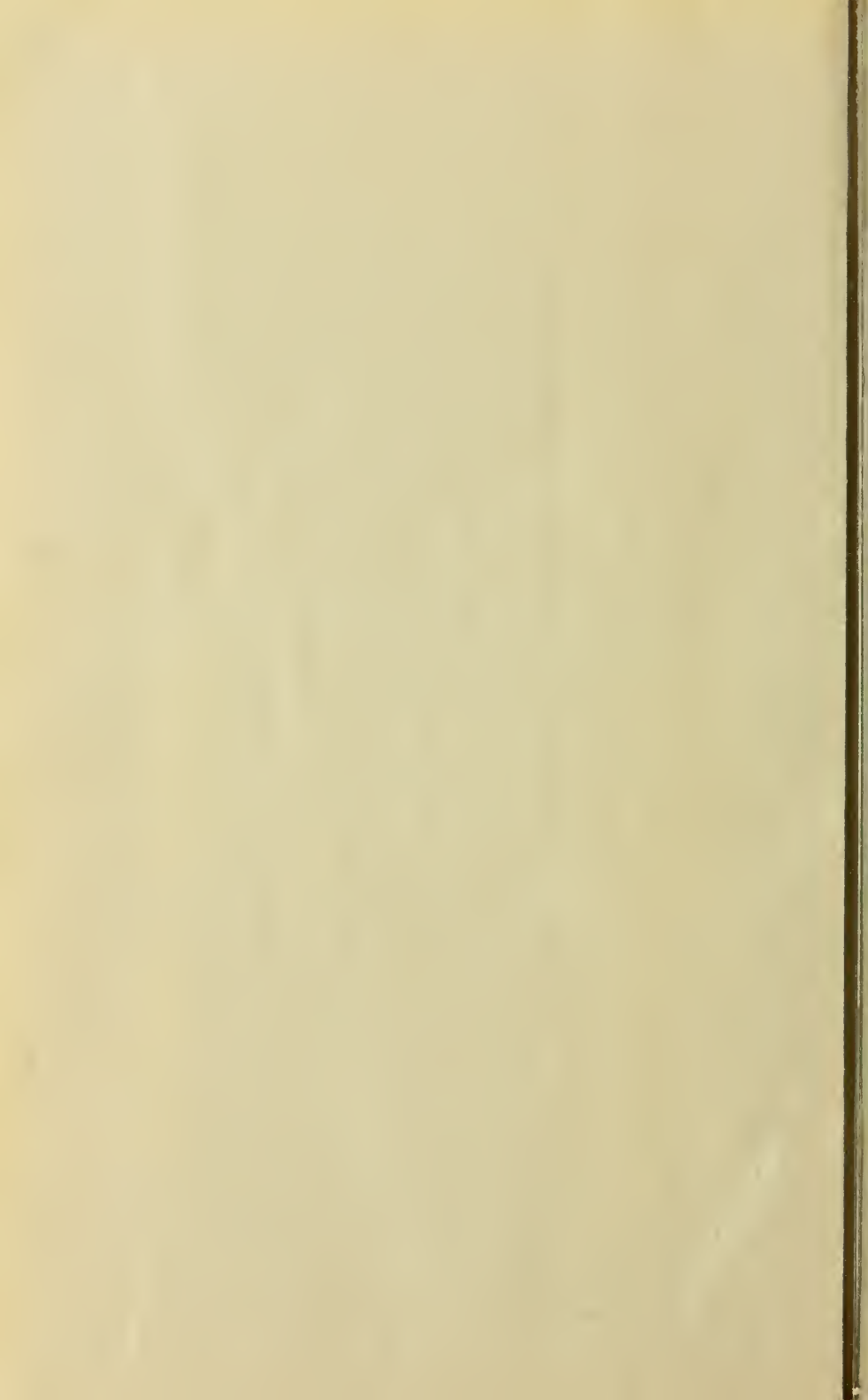
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